

Ternopil medical academy after I.Ya.Gorbachevsky

**METHODS OF EXAMINATION OF A
SURGICAL PATIENT**

Manual

Edited by prof. M.A.Lyapis

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The questions of propaedeutics of surgical diseases studied at
the General Surgery Department are reflected in this manual.

A special attention is paid to the methods and procedures of
clinical examination of a patient in the surgical clinic. It also contains
the methods of examination of patients with hernia of the abdominal
wall, acute abdomen and purulent-inflammatory processes.

This manual is intended for the students of higher medical
institutions of the III-IV degrees of accreditation.

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PREFACE

A timely and correct diagnostics depends first of all on systematic and through examination of a patient. It's a pity, but in teaching surgery, in our opinion, the course of Propaedeutics is paid less attention than it is needed in practice.

The chair of General Surgery of the Ternopil Medical Academy named after I.Y.Horbachevsky has confirmed 10 hours of lectures and 16 hours of practical classes for teaching propeudeutics of surgical diseases within the limits of the syllabus.

The first experience has proved this step to be expedient as the results of control of learning the examination method during the third and senior courses of study indicated certain progress in training students in this aspect.

At the same time we felt lack of methodological literature, textbooks and manuals, especially in the state language. It has urged us to prepare the given manual.

Taking into account the fact of intensive increase in the amount of foreign students, who study in the English language at the Ukrainian higher medical institutions of the IV-th degree of accreditation, and lack of textbooks and manuals for teaching Propaedeutics of surgical diseases in English, the authors have considered it to be expedient to make a translation of the given manual.

While writing it we tried to preserve anatomical-topographical principle, to pay attention to anamnestic examination, to correct usage of physical methods such as percussion, palpation, auscultation, measurements, special symptoms and functional-anatomical tests.

On presenting the methods of examination a special attention is paid to the clinical interpretation of this or that symptom which allows to plan an adequate diagnostic search.

The manual includes IV sections. I – rules and principles of anamnestic examination. II – general examination of a surgical patient. It is the most voluminous part including 10 subsections according to the topographical-anatomical principle. In the III-d section we

considered it to be expedient to emphasize the peculiarities of examination in pathologies which are the most often seen in general surgery. That is why this part consists of three subsections: peculiarities of methods of the patients with purulent-inflammatory processes of the soft tissues, methods of examination of the patients with syndrome “acute abdomen” and methods of examination of the patients with hernia of the forward abdominal wall

The IV-th section is a scheme of a case history for management at the department of General Surgery.

In the final section of the book there is a table of the most widely used laboratory indexes.

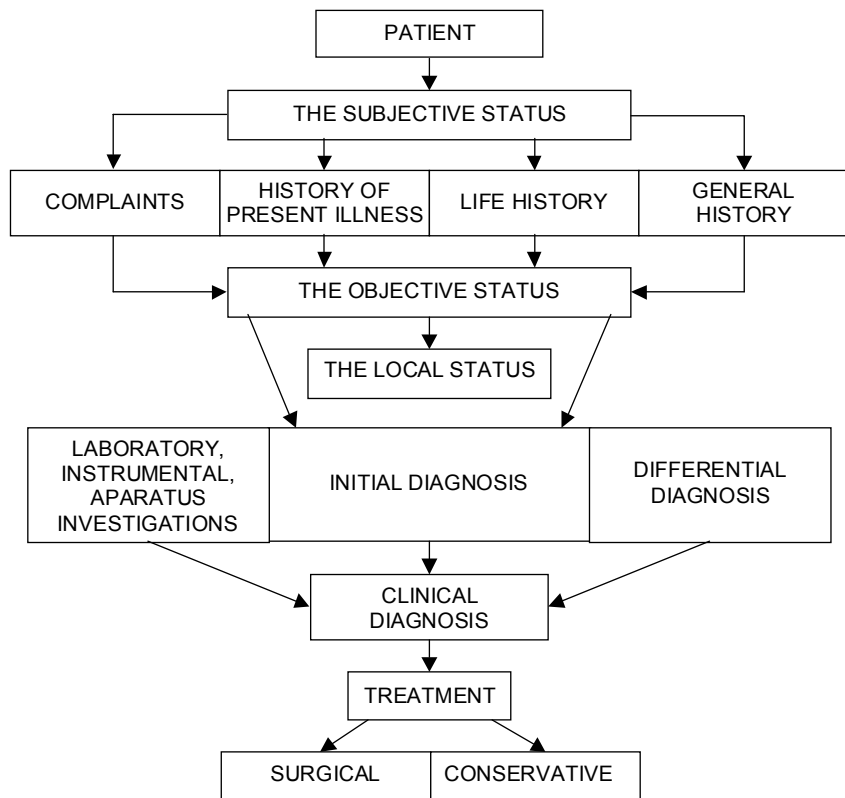
We hope, that the manual will be useful for the second and third-year students as well as for the senior ones and inters.

We will be grateful for the proposals and recommendations concerning this book that will help to improve in the future.

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I. RULES AND PRINCIPLES OF ANAMNESTIC EXAMINATION OF THE PATIENT

It is a well-known axiom: “Qui bene diagnostit – bene curant”.
The centuries-old history of medicine convinces of validity of this expression. Really, any super modern methods of treatment cannot be effective, if it is not known with what purpose to apply them.



During the last years technique of medicine opens extremely ample opportunities for diagnostics, but till now the major component of diagnostic search is a careful history taking, both regular and qualified examination and perfect study of the local status.

It is necessary for everyone to acquire algorithm of examination, which integrally passes into the construction of medical tactics. The given circuit demonstrates the mentioned algorithm.

Let's permit ourselves not to repeat well-known truths concerning the importance of passport data in examination of the patient.

We shall only pay attention to that fact that age, sex, and nationality, and occupation, and even the birthplace in a careful anamnesis and comparison with other data of subjective and objective examination frequently help to select a correct direction of diagnostic search.

In our practice there was a case, when in the differential diagnosis of volumetric process in a liver that fact, that the patient, who lived in Western Ukraine, was born and spent his youth in the republic of Komi, had induced to search echinococcus cyst, which at last has appeared to be correct.

THE COMPLAINTS

It is necessary for doctor to be patient, consecutive and attentive, while finding out the complaints. There are different categories of the patients according to emotionality, intelligence and temperament, and consequently at one and the same disease of the complaints may sound variously.

One patient can simply tell: "the painful belly", another will be talking for a long time and not always clearly about circumstances of time, place and action, which he associates with his illness, not concentrating on the basic complaints. The patient should be listened and tactfully put some question, which will help to find out the basic complaints. For example, character of a pain, irradiation, dependence on nutrition and time, periodicity, etc. The features of the complaints concerning the certain pathology will be submitted in the corresponding parts.

ANAMNESIS OF DISEASE

In this section it is necessary to find out in a chronological sequence the development and course of the given pathology, having stopped on the cause, which, in opinion of the patient, served as a jerk for originating of the illness. It is expedient to pay attention to time of appearance of other new complaints, their features, periodicity and chronology. It is desirable to receive the information concerning treatment or self-treatment, which preceded the admission of the patient to a hospital, not only in case of a chronic pathology, but that is not less necessary, in urgent situations as well. In surgical practice it is extremely important at the moment of diagnostics of acute surgical diseases of the organs of the abdominal cavity, when the application of anesthetics or even narcotics at the pre-hospitalization stage, results in diagnostic mistakes.

In cases, when the patient is hospitalized in an unconscious state, it is desirable to receive more information the relatives, familiars, the witnesses of the beginning of the disease or traumas. The covering letters of the first aid, which the doctors of this service should fill in neatly and carefully, are very valuable for the anamnesis of a disease.

It is necessary to fill in the anamnesis of a disease by concrete precise laconic phrases without “vulgarism”, on the one hand, and especially specialized medical terms on the other.

ANAMNESIS OF LIFE

Asking about the patient’s history of life enables to find out the influence on the development of this or that pathology, ancestral, ecological, household and other unfavorable factors.

Therefore, beginning from the moment of birth of the patient, it is necessary to ask not only about conditions of appearance in the world, body height and development, but also to ask the patient to recollect “a medical genealogy”, that is illness of his ancestors, parents, brothers and sisters.

One should pay a special attention to the disease of blood (hemophilia), diabetes mellitus, oncology diseases, mental dissonances, remembering that not only illnesses are transmitted hereditarily, but also predilection to them.

Asking about a state of sex sphere, it is necessary to be very tactful and at the same time persevering. You see such items of information can be important in the construction of the pathological-genetic concept of the diagnosis.

For example, in pathology of adrenal glands in women there can be infringements in a menstrual cycle, at obliterating diseases of vessels in men – impotency, etc.

The conditions of work and way of life permit also to ascertain the negative factors, which cause these or that “breakages” of a homeostasis. It concerns also feeding (regularity, quantitative and qualitative spectrum) both physical loadings, and state of a workplace.

In Ukraine, during the last decade, the influence of the Chornobyl accident both on the somatic, and on the psychological status of the population is of great importance. It is necessary to take into account these moments, and the ecological state of the district, where the patient lives, too.

Valuable information the curator can receive, analyzing the patient’s past illnesses. So, for example, the endomyocarditis and arrhythmias are dangerous base for originating arterial thromboses, gastritis – for a ulceration of a stomach, chronic course of the latter, without success in treatment – for malignant degenerations.

In connection with the increasable allergization of the population, and more frequent allergic reactions and complications, while finding out the so-called “allergical anamnesis”, it is necessary to ask the patient, which medicine and with what purpose he used, whether he had blood transfusions, its components or preparations, whether he had reactions to specific food, drinks, odors.

Asking the patient whether he has some harmful habits, except for smoking and abuse by alcohol, the special attention should be paid to predilection for this or that kind of narcotics and type of narcomania – a toxomania.

GENERAL (COMMON) ANAMNESIS

1. General (common) state

State of health: is good, satisfactory, bad.

Weight loss (extent in time, to what degree, rate of progress: quick, slow).

General malaise, breakdown (extent in time, to what degree, whether accrues quickly, slowly; whether he can go, stand, sit or only to lay).

Capacity for work (kept, reduced – in what measure lost, whether for a long time).

Fatigability (physical, mental – to what degree, whether quickly accrues, whether for a long time, whether strengthens).

Fever state (the elevation of temperature, whether frequently, whether for a long time, whether strengthens, height, type of fever; duration, chill, chivering, sweats).

Headache. Dream.

2. Dermal cover

If there are (were) any discolorations of the skin.

Eruption, furuncles, ulcers, bedsores, fistulas (for a long time, under what conditions have appeared, whether were long healed).

Cicatrices after former operative treatments, wounds, inflammations.

Abnormal dryness, sweating of the skin (general, local).

Itching of the skin (localization, its force, periodicity).

Sensitivity to outside temperature (cold of arms, legs in the winter).

Whether the bleeding is easily stopped at casual traumas, punctures, whether the cuts are easily healed?

Whether easily there are subcutaneous hemorrhages (bruises) at insignificant traumas? Whether there is a dissonance of the feeding of hair (loss of hair, alopecia, growing gray), whether for a long time?

3. System of respiration

Respiration through the nose (free, labored).

Nasal bleeding (if there are any, whether frequently, whether for a long time; their intensity, duration, under what conditions occur).

Voice (if there are any changes, when they have appeared: at once, gradually).

Dyspnea (if it occurs, constantly, or sometimes, or recurrently, whether for a long time, under what conditions appears, on day or at night, its intensity – insignificant, serious; the duration, if there are any difficulties in inspiration or expiration, in which position decreases).

Cough (whether it occurs constantly or sometimes, or frequently, whether for a long time, in the morning or in the evening; the force of it, whether it is strong, weak, hacking cough; superficial, deep; loud or deaf; dry, wet; if it is accompanied with a pain, dyspnea, vomiting; under what conditions it appears is – a reception of nutrition, strengthens, decreases, stops; whether it is accompanied with expectoration, its character and quantity, kind – mucus, serous, purulent, sanguinolent; its consistence – liquid, thick, viscous, foamy; its color, smell – putrefactive, fetor; whether it is divided into two or three layers).

Hemoptysis if it occurs, constantly or sometimes, whether frequently, or for a long time; under what conditions there is – a cough, physical loading; whether the clean blood is ejected (liquid, clots), its quantity, whether it is mixed with expectoration, color of the blood – red, dark.

Pain in the thorax (if it occurs, whether constantly or sometimes, or frequently, whether for a long time; how it begins – suddenly, gradually; where is it localized, is it superficial or deep; character of a pain – blunt, acute, compressive, prickly, drilling; intensity – strong, average force, insignificant; its duration, irradiation, under what conditions it occurs and strengthens – under the influence of respiration, conversation, cough, position of a body, motions, physical work strengthens; conditions for decrease of a pain, whether the unilateral pain strengthens at an inclination of a trunk in the able-bodied or struck party).

4. System of a circulation (cardiovascular system)

Palpitation (if it occurs, whether frequently, whether for a long time, under what conditions happens, whether there is a sensation of faults in a cardiac performance, their duration and intensity, whether it is constant, or occurs sometimes, whether for a long time).

Pain in the field the heart, or behind the breast-bone (if it occurs, constantly or sometimes, whether for a long time, its localization, how it begins, character and intensity of a pain).

The accompanying phenomena: whether there are edemas (whether frequently, or for a long time, where they are localized, degree of their expressiveness, when they occur – in the evening,

in the morning, from what conditions arise – physical strain, long walk, long standing, reception of a plenty of fluid; reason of relief – rest, medicine); cyanoses (hands, pedes), the paleness (hands, pedes) – whether happens, if it occurs, whether for a long time, when it arises, from what decreases.

5. System of digestion

Oral cavity (if there is dryness, whether frequently, whether for a long time, whether there is a pain of mucous membrane, gums bleeding, whether there is a pain in a field of a tongue, from what it occurs – (pungent, irritant meal); a salivation – strengthened, diminished; unpleasant smack in the mouth – acidic, bitter; sensation of a unpleasant scent from the mouth).

Dents (if there are all teeth, cause of extraction of the teeth, whether there are prostheses, whether there is a pain during a mastication, if the oral hygiene is observed).

Pharynx (unpleasant sensations – dryness, smoking, tickling pain of a mucous membrane; if it is painful to swallow).

Esophagus (transition of nutrition – free, labored; which nutrition passes with effort – hard, solid, liquid; whether the temperature of nutrition matters; the nutrition does not pass absolutely, whether frequently, or constant, whether for a long time; whether there are terms of enriching of permeability of nutrition; whether there is vomiting, its character, admixtures of the blood in it; if the difficulty of transition of nutrition, is connected with the changes in the emotional state, excitement; whether there were combustions of the esophagus, whether there is a sensation “of an extraneous body” in an initial part of the esophagus – under what conditions).

Stomach (ventriculus), intestine, pancreas

Appetite (is good, bad; its changes strengthened, excessive, reduced, changeable; progressing deterioration, absence, complete loss of appetite (anorexia), loss of sense of satisfaction from nutrition; passion for the certain food, aversion to food – to every, to certain, for example, – meat; whether there is a quick sensation of a satiety, whether it is absent).

Thirst (constantly, or sometimes, whether for a long time, how much liquid drinks during a 24 hours).

Heart-burn (if it is constant, whether occurs sometimes, or frequently, whether for a long time; its force, under what conditions occurs – before nutrition, during it, a bit later after it, or does not depend on nutrition; from what it decreases, stops: the use of soda, food, drinks).

Eructation (if it occurs constantly, or sometimes, or frequently, whether for a long time; whether it is silent, or loud; whether it is dependent on the time of nutrition, its quality and quantity; an eructation (belch) – common nutrition (regurgitation), air (empty), acidic, bitter, with a purulent scent; whether the patient feels better after the eructation).

Nausea (if it occurs, constantly, sometimes, or frequently, whether for a long time, its force, duration, dependence on nutrition, its quality, if it is before eating, whether it is accompanied with hypersalivation, vomiting, or attempts at vomiting).

Vomiting (if it occurs, every day or sometimes, or frequently, whether for a long time; its dependence upon the use of nutrition, its quantity, quality, temperature; character of vomit masses – slime, blood, acidic fluid; how much time after nutrition there is a vomiting, its connection with an abdominal pain, pain in loins, with cough, reception of medicine, kind of nutrition; whether it is repeated during 24 hours; a beginning of a vomiting – abrupt; or after nausea, whether the patient feels better after a vomiting, whether it is forced artificially for this purpose; whether was bloody vomiting in the past, whether it was accompanied with a strong general weakness, unconsciousness; color of vomit masses: meat like, coffee like; quantity – insignificant, large; taste: without taste, bitter, acidic; scent – acidic, putrid scent, ammoniac, fecal, fetor, scentless).

Hiccup (if there is any, whether frequently, whether for a long time, duration).

Abdominal pain (if it occurs, constantly or sometimes, or frequently, whether for a long time; localization – in the certain field of abdominal cavity, forward abdominal wall; where it has appeared at first and where was localized later; the character of a pain – dull, ache, acute, cutting, colic, stinging, boring, if this character of a pain is modifiable; the intensity – strong, mild, insignificant and

whether it modified in a span; the beginning of a pain – sudden, acute, gradual, conditions for origination, intensifying: while using nutrition, its amount, quality, time, if it depends on the season, position of a body, physical work, constipation, diarrhea, environmental temperature, gases, taking medicine, usage of hot-water bottle; conditions for decrease, disappearance: abovementioned factors; periodicity – duration of light interspaces; the terms of exacerbation; the duration: quick or is slow appeasement, how much time lasts; irradiation – in what field of a body; the accompanying complaints (in the period of pain) – anorexia, thirst, eructation, nausea, vomiting, headache, elevation of body temperature, icterus, dysfunction of an intestine, delay of gases; other unpleasant sensations – gravity in epigastria, right hypochondria, fatness, the inflation – whether they are constant, rare or for a long time, their dependence on the use of nutrition, its amount, qualities, sequence of their appearance).

Defecation (its rhythmicity, the quantity per 24 hours, whether it is easy, or difficult evacuation; presence of a pain before defecation, during and after it, its localization; character of a pain – acute, stinging, frequency of an exacerbation of a pain and its duration, irradiation; presence of the black feces in past, connection of its appearance with unconsciousness).

Constipation (for how many days there is no evacuation, whether for a long time, if there is a dependence on character of nutrition, time of its use, sedentary life, taking medicine; usual constipation; whether the enema, purgative drugs are used; if constipation progress; the accompanying complaints -nausea, vomiting, abdominal pain, headache, weakness, artificial attempts at defecation with pathological secretion – slime, blood, pus).

Diarrhea (frequency per 24 hours and time, dependence on amount and quality of nutrition. Involuntary defecation, incontinence of the feces – liquid, hard; gases – delay, incontinence; presence of bleedings from a rectum, whether frequently, whether for a long time; if there are the hemorrhoid nodes, whether it bleeds, under what conditions, color of the blood; other unpleasant sensations in a field of anus (itch, burning pain) or rectum, whether it drops out for a long time, under what conditions – on defecation, physical

strain, cough, involuntary, while standing; the feces – formed, tape like, (“sheep”), foamy, fat; consistence – hard, liquid, watery; color – white, yellow, brown, black, decolorized; odor; admixtures of the blood – red, dark, not mixed with the feces, like drops; admixtures – slime, pus, residual of undigested nutrition, tissue).

Liver

If the pain in the right hypochondria (occurs constantly, or sometimes, or frequently, whether for a long time; presence of attacks of a very strong, acute pain, their frequency; character of a pain, its intensity, beginning, duration, the factors, which strengthen, reduce, liquidate a pain, its irradiation; the accompanying complaints -nausea, vomiting, abdominal distention, elevation of temperature, icterus, general weakness; other unpleasant sensations – heavy feeling on the right hypochondria, dull pain constantly or sometimes, under what conditions they strengthen, disappear).

Icterus (if it was, when, its beginning and duration, under what conditions it decreased, disappeared; with which phenomena was accompanied – discoloration of urine, the feces, dermal itch, abdominal pain, elevation of temperature, dissonances, headache, gum bleedings, nose bleedings, dermal hemorrhages, blood in the feces).

Lien (Spleen)

If the pain in the left hypochondria (occurs, constantly or sometimes, whether frequently, whether for a long time; its character, intensity, duration, conditions for appearance and disappearance, accompanying complaints – bloody vomiting; other unpleasant sensations in the left hypochondria – gravity, dull pain, constantly or sometimes, or frequently, whether for a long time, under what conditions arise, disappear. If the pain was accompanied with the elevation of temperature – its typical characteristic for malaria attack.

6. Genitourinary system

If the pain in the lumbar field (occurs, whether it is constant, whether sometimes, whether for a long time, or frequently; on the right or on the left sides, in both part; presence of attacks of a very strong pain (renal colic) and their frequency; character of a pain, its intensity, beginning, duration, condition for appearance of a pain

and its disappearance, accompanying complaints – chill, elevation of body temperature, nausea, vomiting, attempts at urination, dysuric phenomena, the blood in urine, dryness in the mouth, thirst, headache; whether there were stones with urine; unpleasant sensations in a field of a loin – gravity, dull pain; a pain in the field of sacrum, perineum – constantly or sometimes, whether frequently, whether for a long time).

The accompanying phenomena (edemas; time and sequence of their appearance, condition, which assist their appearance and disappearance; a headache, faulty vision – time of their appearance).

Pain in the bottom of the abdomen (constantly or sometimes, whether for a long time, conditions for appearance, intensifying, disappearing).

Excretion from urethra (slime, pus, blood – if it is frequent, whether for a long time, its duration, last treatment; whether there is a spermatorrhea, whether frequently).

Urination (voluntary, free; frequency – on day, at night, impulse to urination; a pain, burning; changes of a jet of the urine – thin, weak; constant secretion of urine by drops; quantity of urine per one urination, per 24 hours – polyuria, oliguria, anuria, nikturia; influence on the act of an urination: changes of a body position, driving, getting cold, excitement; incontinence of urine – constant, at night; an ischuria).

Urine (its color, transparence, deposit, admixing of the blood – clots, even coloring, or “meat like”, presence of pus, slime).

Sexual sphere (sexual drive, potency – in men, and – character of menstrual period in the women: regular, irregular; dissonances – dysmenorrhea, menorrhagia, the amenorrhea, metrorragia, whether it is painful, its character, other excretions).

7. *Locomotorium*

Motions in joints (free, unmoved – which joints).

Pain in limbs (in which joints – large, small, in one joint – in some of them; if the pain is persistent, whether it is identical in both limbs, whether it increases).

The pain in backbone (in what part – if it is constant, occurs sometimes or frequently, whether fo a long time).

Pain in muscles (particularly during walking – alternating lameness – forced periodic stops during walking; fatigue of legs while walking; whether for a long time, how frequently it is necessary to stop during a walk, because of the pain, that appears in one or both legs).

Short-term paleness, cold, the numbness of one, or several fingers (if it is frequent, whether for a long time, whether it is symmetric on both limbs).

Pain sensations in the certain dactyls of the foot or in the certain departments of the foot (while walking, during a rest, their character, dull, colic, burning, jerking; feeling of cold in the feet, the toes).

Muscles force (weakening, for how long).

8. *Nervous system*

Presence of traumas (wounds, fractures of the skull, of a column in the past). Dream. A headache. Unconsciousness. Dizziness. Cramps.

Mental sphere (memory, attention, emotions, mood, character). Sense organs (vision, hearing, smell, taste).

II. GENERAL-OBJECTIVE EXAMINATION OF A SURGICAL PATIENT

THE GENERAL EXAMINATION

Before beginning the examination of the patient, the curator, should determine state of consciousness of the patient. For this purpose it is necessary to know the standard classification, according to which the consciousness is divided such levels: clear, mixed and clouding consciousness.

One more clinically differentiable degree of awareness is *stupor*, a sleepy state of the patient manifested by the patient's responding only to vigorous stimulation, like loud shout, shake; it is also marked by a disorder in the patient's answers.

In the other, more difficult cases it is impossible to arouse the patient from a state of sleeping he does not answer the questions, but reflectory reacts to strong irritants, first of all, to a pain. This condition is called *sopor*.

The complete depression of consciousness with loss of sensitivity, reflexes and relaxation of muscles is classified as *coma*.

A short-term, (for some seconds or minutes), the loss of consciousness is called *dizziness*. The reason for it – is acute deficiency of a cerebral circulation; neurogenic (emotions, disorder of a vegetative innervations) or somatogenic (arrhythmia, cardiac blockages), genesis.

A state of extreme mental excitement, accompanied with hallucinations and psychomotor exaltation is named *delirium*. It may be caused by organic lesions of a brain, and intoxications, not only alcoholic. Sometimes surgical patients during difficult peritoneal or pancreatic endotoxiosis run into a state of delirium.

On examination of the patient his *positions* should be determined. If the patient is able to move freely, to assume any posture and to serve himself, they speak about *active* position.

Position is named *passive* – if the patient lays immobile, does not react to irritants.

In those cases, when the patient assumes certain position to achieve relief of his state is defined *forced* position. For example, with legs raised to the abdomen in perforative ulcer of a stomach.

Types of the constitutional constitution (make up) of a body

They distinguish *normostenic* type with a proportional constitution of a trunk, even-developed musculature, as a rule, in persons of average or above average stature.

The asthenic constitution is characterized by a long chest, long neck, long limbs, which are disproportionate to the trunk. The body structure is usually above average.

Hyperstenics distinguish by a wide trunk, short neck and short arms according to the trunk. Obesity is often observed in such persons.

The degree of feeding is defined as low, normal, and well fed. The pathological changes of nourishment are treated as a cachexia, inanition and obesity.

The degree of obesity is determined by such degree:

- 1 – 15-29% of superfluous weight;
- 2 – 30-50% of superfluous weight;
- 3 – more than 50% of superfluous (excessive) weight;
- 4 – more than 100% of superfluous weight.

During stay in a hospital of the surgical patient it is necessary to weigh him periodically as dynamics of loss or increase of body weight in some cases has diagnostic significance (malignant tumors).

Temperature is determined according to one-off measurement and to the character of a temperature curve, which, certainly, gives more objective and complete information for diagnostic search.

There are such types of temperature curves:

Remittent – the indications of temperature vary from subfebril in the morning to high indexes in the evening with interval greater than 1°C. it is characteristic for local abscesses, bronchopneumonia.

Intermittent – is regular elevation of temperature with high fluctuations of indications and falling to the norm in the morning

(interval greater than 2°C). It is characteristic for sepsis, particularly urogenital.

Subfebril – rising of temperature within the limits of 1°C with insignificant fluctuations in the morning and in the evening. It is typical for a chronic inflammation, postoperative term, when there is a tendency to reducing; it also occurs in hematomas and in the first phase (inflammation) of wound process.

Constant – temperature, which is always 38-39°C and is not reduced in the morning, can be caused by a phlebothrombosis, pyelophlebitis or is the first symptoms of these difficult complications.

Pulse. Frequency, rhythm, filling, and strain are determined. The certain parameters help to define a state of cardiovascular tone in a various surgical pathology.

Acceleration of pulse (tachycardia) is observed in acute bleeding, shock conditions, and peritonitis. Retardation (bradycardia) – is observed in craniocerebral traumas.

It is necessary to remember about correlation between pulse and temperature. The acceleration of frequency of cardiac contractions for 8-10 heartbeats corresponds to the elevation of body temperature for 1°C. The disturbance of such correlation confirms the difficult state of the patient caused by the development of an acute heart failure in shock conditions and acute blood loss.

Respiration. Depth, rhythm and respiration rate are to be determined.

The acceleration of it (more than 24-26 per minute) confirms the development of a hypoxia, which accompanies the inflammatory processes of a pulmonary tissue and development of endotoxiosis.

The retardation of respiration occurs in craniocerebral lesions because of rising of intracranial pressure. It is important to notice, that respiration has a superficial or deep character. If the superficial respiratory motions cyclically pass into deep,

This phenomenon is called the respiration of Cheyne-Stokes, which is observed in preagonal states.

The interrelation between the pulse rate and respiration rate, which in the able-bodied men equals 4-4,5, has the certain diagnostic value. Acute diseases this index does not almost vary. In a pulmonary pathology it is 2,3-2,5 (attribute Koupo).

PROCEDURE OF EXAMINATION OF THE SKIN AND ITS APPENDAGES

During the examination the color, cleanness, solidity, elasticity should be defined.

Color of a skin depends on:

- 1 – solidity, transparence and quality of normal or pathological pigments;
- 2 – degree of development, depth and plethoric of skin vessels;
- 3 – contents of erythrocytes and hemoglobin in volume units of the blood.

Normally, depending on racial, ethnic, genetic features, the color of the skin is pale-rosy, black, brown, red, and yellow.

The pathological changes of skin coloration (such as paleness, redness, icterus, cyanoses, hyper pigmentation) can be transitory and stable, and concerning spreading – they can be diffuse and local.

The local concentrations of a pigment such as born maculae (naevus pigmentosus) are considered to be not pathological, but their changes and development can be attributes of malignant transformation, especially in the presence of melanoderma.

The pallor of skin is observed during anemia, which can be clearly seen by examination of pinna auricle on the light.

The diffuse bronze coloration is observed in diseases of prerenal glands (Adissons illness), local, near of a wound – as a result of anaerobic infection contamination (hemolytic action of toxins).

Rosy or red coloration is typical for acute inflammatory processes. It is necessary to pay attention here to spreading of the redness and its intensity. In spreading of the infection on lymphatic and venous fulcrums the pink-red strips are observed along the vessels. The bright red stains with unequal contours make us to suspect erysipelas. The corresponding shades of hyperemia and cyanose distinguish other purulent-inflammatory processes of mild tissues (see part III).

The icterus is observed in diseases of the liver, obstruction of bilious ducts, hemolytic anemia and some (contagions) infectious diseases (leptospirosis, malaria, pseudotuberculosis). In case of hemolytic anemia the icterus is mild and is combined with pallor.

During some poisoning there is an artificial icterus, a condition in which yellowing of the skin and normal color of mycoses is typical; but it is not characteristic of red, above-mentioned forms of an icterus.

Widespread cyanosis occurs owing to cardiac or respiratory failure.

Local cyanose is caused, as a rule, by disorder of venous circulation due to a clottage or compression squeeze of veins. So, the lesion top of vena cava superior is followed by cyanosis of the upper part of the trunk, neck and upper limbs, and the disorder of circulation in inferior vena cava is followed by cyanotic coloration of the lower part of the trunk and lower limbs.

The integrity of a skin can be injured owing to traumas, lesions, combustions, and diseases. In some of them, such as, the dermal tumors, tuberculosis, lues, actinomycosis there are ulcerative defects with decay. The trophic ulcers with characteristic localization and clinical course appear in disturbance of trophicity due to a circulation insufficiency, the obliterations of arterial vessels, diseases of a spinal cord (see on part III).

In the patients, who stay for long time in the forced position or in bedridden persons, there are ulcers (bedsores) in separate parts, especially on the sacrum, heels and shoulder blades.

The *cicatrixes* are differentiated in the following way:

- Postoperative (smooth, elastic, almost insignificant in wounds healed by first intention and wide uneven-shaped, healed – by second intention and contagious complications);
- Tubercular – as deep involved;
- Syphilitic – star-shaped form.

Peculiar cicatricial changes of the skin like parallel narrow white strips, caused, as a rule, by of excessive expansion of the skin and tear of connective tissue, are observed in pregnancy, obesity and edemas. In illness or Itzenko-Cushing's syndrome and long-term use of glucocorticoids analogical strips are observed, but they are more often of red violet color and allocate not only on the abdomen and femurs, but also in the field of breast and shoulder girdle.

The *elasticity* of the skin is determined in different fields of a body. The skin is taken in a small fold, compressing it between the thumb and index finger and release. If the elasticity (turgor) of the

skin is normal, it turns out, at once, if slowly and not completely, it indicates lowering elasticity. At aging the skin gradually becomes wrinkled, flabby, dry, hiperpigmentation stains occur on it.

The disturbance of elasticity of the skin is observed in diseases of a thyroid gland (it is tender, mild, “velvet” – in thyrotoxicosis and solid, thick, rough – in hypothyroidism), in scleroderma (solid, taut, you can not make a fold on it), in an acromegalia (it is thick, taut, rough).

Hypodermic basis. In order to find – out the depth of the layer of the subcutaneous fat the skin together with the fascia must be taken in a fold. It is particularly easy to make it on the abdomen. You can have the real notion about this procedure, if it will be carried out below the angle of a scapula. If the size of the fold is more then 1,5-2 cm it indicates obesity (fig. 1).

It is important to determine edemas of a hypodermic cellular tissue. The appearance of them under eyes indicates renal disease, on inferior limbs – about a cardiac decompensation or venous disturbances.

For finding out the edema on a front surface of a tibial bone we press the skin and hypodermic basis by fingers (fig. 2). If the formed deepening does not disappear at once, it indicates considerable edema.

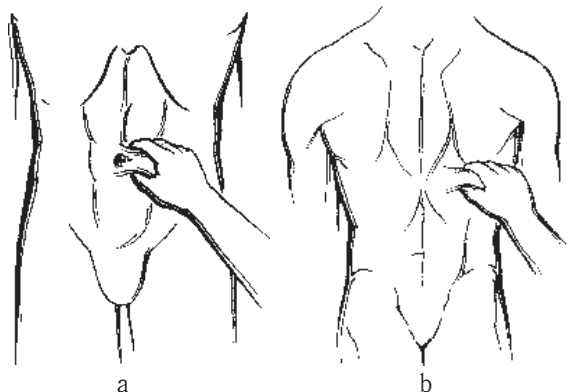


Fig. 1. Determination of the depth of the subcutaneous fat: a) on the abdomen; b) on a scapula.



Fig. 2. Determination of edema on a front surface of an antecubital.

In disorders of lymph circulation (elephantiasis) it is difficult to observe such deepening on a background of the solid hydropic skin.

Hair in axillary fields, on a pubes, and in the young men and on the face, usually occurs in the period of puberty.

In the women the pubic hair is in the form of a triangle with horizontal top limit, and in men it is like rhombus, with its fastigium directed up and quite often stretched by a narrow strip, which passes along a white line of the abdomen down to a belly button.

Excessive hair on the trunk and limbs in women (hyperthecosis), especially associated with the growth of a beard and moustache (hirsutism), is observed in Itzenko – Cushing's disease, tumors of ovaries and its cystic degeneration (syndrome of Shtein-Leventhal).

The absence of hair in men indicates the lack of androgens.

PROCEDURE OF EXAMINATION OF PERIPHERIC LYMPH NODES

It is carried out in symmetric fields in a certain sequence: submental, submandibular, parotid, occipital, posterocervical, antero-cervical, supraclavicular, axillary, ulnar, inguinal, popliteal.

You should put your fingers or palm of the hand on the skin area, which is examined, and by longitudinal movements with insignificant pressure to palpated lymph nodes. You have to define solidity, size, form, consistence, personal property of lymph nodes, and presence of pain, ad nation between themselves and with environmental tissues. Visually they ascertain presence of changes of the skin above units: a hyperemia, ulcers, and fistulas.

On a palpation of submental and submandibular lymph nodes the patient is asked to lean his head forward and fix it with the left hand. The slightly bent fingers of the right hand palpate the given region, trying to move the nodes to the edge of mandible (fig. 3).

Then behind of auricles they palpate parotid lymph nodes and, on displacing arms the lowe – occipital nodes are palpated (fig. 4). Posterocervical lymph nodes are palpated in region between back edges of sternocleidomastoid muscle and external edges of lengthy muscles of the neck. Anterocervical lymph nodes are palpated along internal edges of sternocleidomastoid muscles the fingers being put perpendicularly to the neck (fig. 5).

Supraclavicular nodes are palpated on the corresponding region (fig. 6). It is impossible to palpate subclavicular nodes, as they are

situated under the large and small pectoral muscles. Therefore their description during usual objective examination is an error.

Axillary nodes are palpated in the following way: the patient is asked to lift up his arms horizontally to the side, in order to check the axillary area, then the doctor puts a palm on lateral surfaces of a thoracic wall, and moves his fingers to the bottom of armpits. Then the patient slowly moves his hands down, the doctor examining by slipping motions researches the specified region (fig. 7).

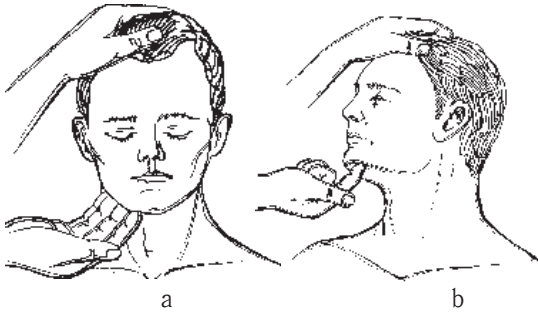


Fig. 3. Palpation of submental and submandibular lymph nodes.

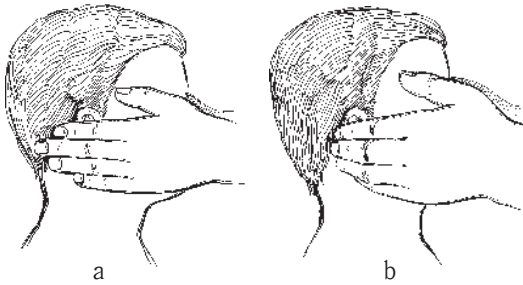


Fig. 4. Palpation of parotid and occipital lymph nodes.

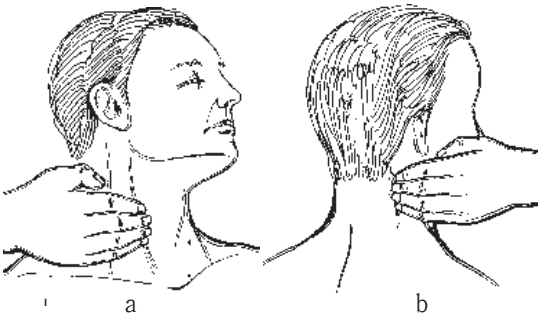


Fig. 5. Palpation of anterocervical and postero-cervical lymph nodes.

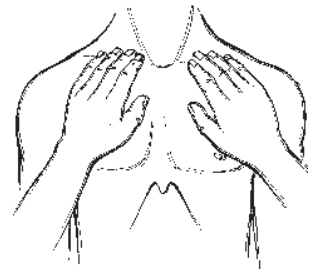


Fig. 6. Supraclavicular nodes palpation.

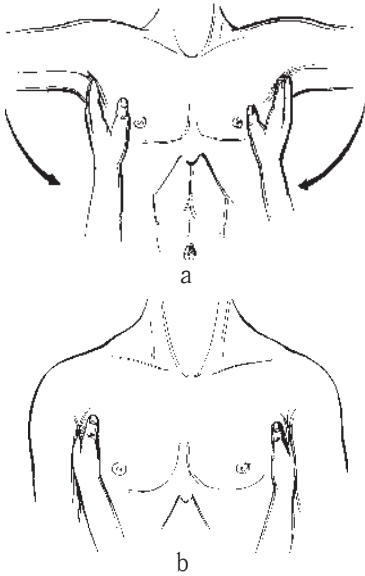


Fig. 7. Palpation of axillary nodes.



Fig. 8. Palpation of inguinal lymph nodes.

The ulnar lymphatic nodes are situated in an internal trough *m. biceps brachii* in its distal part. There they are examined on the bent at right angle arm of the patient by a palpation with 2-5 fingers.

The inguinal lymphatic nodes are palpated along Poupart's ligament in a parallel way from both sides above and below it by sliding perpendicular motions. In such examination it is possible to diagnose both inguinal hernias, and undescended into the scrotum testicle (cryptorchism).

Femoral nodes are situated along the main vessels in Scarpovscs triangle, and they are palpated there.

It is necessary to take into consideration that femoral nodes have a lot of anastomoses with axillary ones and rather frequently process, especially metastatic, can pass from one node to others (fig. 8).

Popliteal nodes are palpated deep in a popliteal pit with the knee joint bent at right angle.

Small up to 0,5-0,8 mm in diameter nodes can be palpated in submandibular axillary and inguinal regions. As a rule, they are elastic, mobile, painless.

More substantial growth of nodes, and also their appearance in other areas in most cases are characteristic of pathology.

PROCEDURE OF EXAMINATION THE HEAD AND THE FACE

Topographic-anatomical data

The skull is divided into cerebral and facial. Cerebral cranium has fornix, which consists of the upper parts of the frontal, temporal, occipital bones. The basis of it consists of the occipital, basal and temporal bones, orbital processes of the frontal bone. Coherent sutures unite all the bones of the skull. Suture between the parietal bones is named sagittal (interparietal) suture; between the parietal bones and frontal bone it is named coronal suture, the one between the parietal bones and the occipital bone is lambdoidal suture.

All the surface of cranium's fornix is covered by musculus epicranii (m. epicranii), epicranial aponeurosis (galea aponeurotica) is in the middle of it, there is no sub skin basis in the region of fornix.

The facial skull consists of the upper and inferior jaws, zygomatic, nasal and lacrimal bones. In frontal and maxilla bones there is air emptiness, additional to the nasal cavity frontal sinus (sinus frontalis), sinus of the upper jaw – antrum of Highmore (sinus maxillaris).



Fig. 9. Topographical regions of the head and the neck.

The external parts of the head are supplied with the blood through of external carotid arteries, brain is supplied through internal vertebral arteries, which form Valisij's ring on the basis of the skull.

A blood outflow from emptiness of the skull and from external integuments passes through the system of an internal jugular vein, which begins in the transversal sinus (sinus transversus).

Besides the head and face are divided into certain topographical-anatomical zones (fig. 9).

THE HEAD

Examination

In examination one should pay attention to the form and size of the head. In children the small sizes of the head (microcephalia) are

observed in idiotism, and large head (macrocephalia) – is associated with the main edema. The square head flattened above and with the jut frontal humps speaks for the past rachitis. "The tower skull", low and high, as a rule, is associated with a hemolytic icterus.

The position of the head can be characteristic of many diseases of the nervous system. Let's stop only on signs, which are met more often. The immovable position of the head is observed in the ankylosis of joints of a cervical part of the column (spondylarthrosis, spondylarthritis), or in a rigor contraction of cervical muscles (myositis). If the muscles are contracted only on one side, the head is stopped to one side (wry-neck); bending the head backward (due to contracture of occipital muscles) and restriction of passive motions of the head (rigidity of the occiput) – is a characteristic sign in irritation and inflammation of dura mater encephali (meningitis).

The involuntary movements of the head in the form (of tremor) are observed in a shivering paralysis (paralysis agitans). The rocking back and forth (nodding) is observed in of aortal valves failure (set of Mjusse symptoms), inordinate – movements are – in chorea.

The local deformation of skull's fornix (jut or hollow) indicates to fracture of the bones or tumor of mild tissues. Presence of bleeding, excretions of a neurolymph through the nose and ears are characteristics of fracture of the basis of the skull.

The diffuse falling out of hair on the head (alopecia) observed in a radial illness, cachexia, anemia, hypotyrose, and erysipelas. The local (patchy-loss) baldness is observed in a furunculous, syphilis, and fungous affection.

Palpation

With the help of palpation of soft tissues of the skull nonmalignant tumors, are determined, as well as their solidity, consistence, movability, bracing to the skin and aponeurosis. Persisting for a long period of time they can cause indentation or oval defect of the bone of the skull.

In damage of the bones of the skull by means of a palpation a kind of fracture (linear, comminuted, depressed, fenestrated) is determined.

Percussion

Percussion of the skull is made by semi-bent index finger striking the fornix. In volumetric intracranial creations, which are close to

the bones (tumor, hematoma, abscess) the precise tympanitis is obtained. The percussion of the temporal bone will cause a pain in inflammation of the middle ear.

THE FACE

Examination

Examining the face, attention must be paid to its expression, its symmetry and proportionality of its separate parts, color of the skin, skin eruptions, edemas. The spotted blush with shining eyes, hyperemia of vessels of the sclera and excited general expression on the face is observed in the patients with a fever.

The attacks of tonic convulsions with contractions of the facial muscles in patients with tetanus or hypoparathyrosis cause the appearance of expression of a sardonic smile. Inflammatory processes

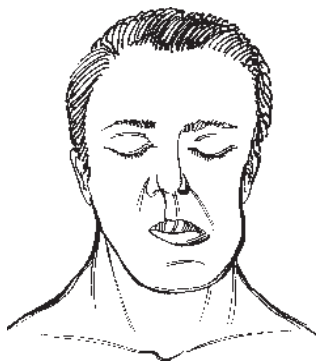


Fig. 10. A forward dislocation of a mandibular joint on the right, the mandible is displaced to the healthy part (sound).

on the face, in particular in localization on the upper lip (furuncle, anthrax), can get of a severe course with formation of large inflammatory of an infiltrate and edema of tissues. This process can spread to the eye area, through venous anastomoses – to meninges and region of a cavernous sinus. Edema of eyelids and protrusion of eyeballs can be observed in the development of thrombosis of a cavernous sine. The most expressed deformation is in forward dislocations of a mandible: a mouth is widely opened, the patient cannot close his jaws, the mandible just out, it is difficult to swallow and to speak, mastication is impossible, hypersalivation is observed (fig. 10).

In the patients ill with neuritis of the facial nerve an oral aperture is asymmetrical. A mouth is in the sound part, and on the side of a lesion the mouth angle is lowered, nasolabial fold is less expressed. It is difficult and painful to open the mouth during paratonsillar abscess, furuncle of external acoustic meatus.

In severe diseases of the organs of the abdominal cavity (acute and purulent peritonitises) the typical face, is described still by Hippocrate: deathlike with a cyanotic shade, with the sharpened features, with deeply sunken eyes, with the large drops of cold sweat on the forehead (facies Hypocratica).

Hydropic, swollen face is in renal diseases, pale, ugly (distorted) face is during the hydropic forms of diseases or puffy and acyanotic one with an indifferent, sleepy sight – is in chronic diseases with the phenomena of kidneys failure (diabetic nephropathy, contracted kidneys).

In the patients, who have AIDS the skin of the face quite often is affected by sarcoma Kaposhy in the form of red, dark – violet or brown maculae, nodules, eruptions. Round, fatty, shining face, with a blush, and presence of hair on it is characteristic for the women with Itzenko-Cushing's disease.

In phlegmons of the face there is a hyperemia of the conforming area of the skin or mucous without sharply expressed borders, sometimes it is very significant. Hyperemia of the skin is so intensive, that feigns an erysipelas. The skin shines, is taut, you can hardly make a fold from it. Natural folds or deepenings are getting smooth in significant edema. Due to an inflammatory swelling and collateral edema of nearby tissues of the patient's face is quite often disfigured. In unilateral phlegmons the asymmetry of the face is seen.



Fig. 11. Phlegmon of a buccal area.

The changes of a mucous of labiums, intrinsic surface of a mouth, a tongue are typical of it, the skin becomes dry, pale or cyanotic. Tongue is coated. The infiltrate in the developed phlegmon is determined as inspissation, laid in the mass of swollen tissues (fig. 11).

The systematic and attentive examination of the head and the face is especially valuable in fresh traumatic damages, before edematization of environmental tissues.

Special attention should be paid to eyes examination. First visually the width and

evenness of eye-slit (ocular fissure), position of eyeballs are determined. One must pay attention to the form and mobility of eyelids, to state of their skin, state of brows and eyelashes. Bilateral narrowing of palpebral fissures due to an edema – "watery" eyelids are characteristic of renal diseases. The augmentation of eyelids in volume – is caused also by emphysema. It occurs in fracture of eye-socket with air penetration from additional sinuses of a nose; there is a crepitation on their palpation. A one-side edema of lids is caused by an inflammation, trauma or tumor. In inflammation the eyelid are tumescent, bloodshot, hot to the touch and morbid. Hyperpigmentation of eyelids is Jellinek's sign in tyrotoksikose. The ptosis (falling) of the upper eyelid, distorted face identifies pares or paralysis of a facial nerve.

The mucous membrane of conjunctiva and eyeballs are also examined. Color of a mucous membrane, degree of its humidity (shine), state of a vascular drawing, presence of eruptions and pathological excretions are defined. In the examination of eyeballs the characteristic of sclera and cornea state is given. For this purpose the doctor pulls down with his thumbs the lower lids and asks the patient to look upwards (fig. 12).



Fig. 12. Examining the conjunctivas and eyeballs.

Examining eyes one should pay attention to the form, size, pupillary reaction to light and accommodation of pupils.

Mydriasis (pupillary dilation) is observed in some poisoning (belladonna, mushrooms) and in hepatic coma.

Miosis (pupillary contraction) occurs in the patients with uremic coma, in alcoholic intoxication, tumor of a brain and hemorrhages of brain ventricles. If the pupils are constricted, it is necessary to find out, whether pantopon or morphine was taken. Acute miosis is observed in serious intoxications.

Unequal dilation of the pupils (anisocoria) has diagnostic importance. The pupil can be dilated on that side, where subarachnoidal or subdural hemorrhage appeared during acute trauma of

the skull, or fracture of the base of the skull, development of thrombosis of a cavernous sine. It is necessary to mention, that in comatose state, when the evident signs of life (such as pulse, respiration, beat of heart) disappear, the attention should be paid to a state of the pupils, which dilate at biological death. If the pupils remain constricted, it is necessary to carry out reanimation measures.

Checking corneal-blink reflex it is necessary: while holding the eyelids with the fingers to touch the cornea with the tip of the cotton wick; the movement of the lids and its intensity indicates positive hallmark.

Reaction of the pupil to light is determined by the following method. Previously it is visually determined the size of the pupils, then the patients covers both eyes with his palms for some seconds and opens them in turn, in such a way the changes of the size of the pupils are determined.

Recession of the eyeballs in the orbit (enophthalmos) is typical of a myxedema, it is also one of the characteristics of the face in patients with peritonitis.

Eyeballs protrusion (exophthalmos) is the sign, characteristic of hyper function of the thyroid gland, is necessary to check up the so-called ocular signs.

Grefe's sign – the patient is recommended to watch the movements of the doctor's index finger from upward to downward. At turn of the eyeball downward there is a strip of the sclera between the edge of the lid and the cornea.

Kocher's sign – the doctor moves his finger in the opposite direction. The patient's upper lid moves faster than his eyeball and opens a part of the sclera of above the corneal membrane.

Mobius sign (failure of an ocular convergence) – the patient watches the top of the finger, which doctor moves to his nose. Owing to insufficiency of the internal muscles at sight fixation near eyes one of them deviates.

Stellwag's sign – the patients seldom blinks (normally 5-10 times per minute) owing to retraction of the upper lid.

Claud Bernar-Horner's syndrome is characterized by one side recession of the eyeball; narrowing of the ocular fissure, upper lid

ptosis and constriction of the pupil, frequent elevation of the temperature and hyperhidrosis of the affected side. This sign is connected with pares or paralysis of a cervical or thoracic part of the sympathetic nerve and indicates pressure on it with tumor of mediastinum, metastasis at mediastinum or aortic aneurysm. Finding out of a Horner's triad after vagosympathetic novocain block indicates its correct performance. If in the examination of the face it is possible to determine, that the patient cannot close his lids, or is able to do it incompletely, we observe "hare's eye" (lagophthalmus), which in combination with the hanging down angle of the mouth and alignment of nasolabial fold is the result of a flaccid paralysis of the facial nerve.

Palpation

With the help of palpation we determine border of the pathological process of bone-control elements (protuberances). Such cognitive element in the region of the head is external occipital prominence (protuberantia occipitalis externa), from which linea nuchae superior extends to the mastoid process. In front of the ears we palpate the upper and lower parts of jaw arch, its joint, edges of the ocular orbit, nasal bones. Pain, which appears at pressing with the index finger on the place of location of the upper branch of a triad nerve in the region of a superciliary arch, indicates inflammation of the frontal sinus (frontal sinusitis metopantritis).

In order to identify the state of a mandible in the presence of trauma grasped with two arms at teeth and inferior part according to incisors and molar teeth. The cautious compression in the opposite part till the appearance of the first signs of the pathological mobility enables to determine fracture.

NOSE

Examination

The attention is paid to the size, form, and state of the skin. Increase in the size and painful tumescence, inflammatory hyperemia of the skin is caused by furuncle of a nose. In the presence of traumas of the nose is swollen and cyanotic. It is disproportionate large, in the patients ill with acromegalia. Most alcoholics have red color noses. The nose is narrow, with refined skin; there is no fold in the patients ill with scleroderma. The rhinoscleroma, tuberculosis,

relapsing perichondritis is result in deformation of the nose because of the cartilages collapse. Concavity of the bridge of the nose (the saddle-back nose) is the result of traumas, syphilis, and leprosy.

The nasal orifices are examined by the following method – doctor with his one hand moves back and fixes the head of the patient, and then lifts the top of the nose upwards with the thumb of the other hand (fig. 13).



Fig. 13. Examination of the nasal orifices

The presence mucous purulent excretion in the nasal orifices indicates inflammation of the mucous membranes of the nose or additional nasal sinuses. Sanguinopurulent excretions from the nose are observed in pathological processes, which result in necrosis and formation of ulcers of mucous (diphtheria, tuberculosis, cancer, leprosy). Quite often excretions have unpleasant odor.

Fetor running nose is characterize of special form of atrophic rhinitis – ozena.

Nasal bleedings occur in the presence of trauma of the nose, vascular tumor of the nasal orifices, hemorrhagic diathesis, hypertensive crisis, fast decompression in the pilots and divers, and also in increased injure of mucous. In most cases source of the nasal bleeding is the vascular plexus in a forward part of the nasal septum (locus of Kisselbach). Nasal excretions of transparent cerebrospinal fluid are observed in trauma of the skull.

The nasal breathlessness can be caused by many reasons: by vasomotor rhinitis, by sinusitis, adenoids, hematoma or abscess, extraneous body, tumor. In serious dyspnea the accelerated movements of the nostrils are observed quite often during respiration.

EARS

Examination

The attention is paid to the position, sizes, form of the ears, and state of the skin. Inflammatory processes of cartilages (perichondritis) are result in its tumescence and increase in size. The one-side

perichondritis is often of contagious origin; the bilateral one is observed in lesion of cartilaginous tissue (relapsing polychondritis).

The deformation of the ears is observed after perichondritis, tuberculosis, and also in congenital anomaly of the development of the connecting tissue (Marphan's syndrome) and chromosomal anomalies (Shereshevskii-Turner syndrome). The deflection of the ear forward occurs during inflammation of the mastoid process (mastoiditis) in the patients ill with purulent otitis and can be associated with a tumescence and hyperemia of the skin. In the patients ill with inflammation of parotid salivary glands (parotitis) there is one or bilateral tumescence in front of the auricle.

Examination of external auditory orifices permits to find out changes of the skin and presence of excretions. Mucous or purulent excretions are observed in the patients ill with inflammation of the middle ear (mesotympanitis); bloody excretions from ears, which appeared after trauma, identify fracture of the basis of the skull, or they are caused by barotrauma.

Palpation

Normally parotid salivary glands are imperceptible; they cannot be palpated. In patients with an inflammatory defect of parotid glands, the tumorous morbid tumescence, of pasty, or solid – elastic consistence is palpated. An insignificant morbid tumescence and morbidity in front of the ear occur during arthritis of a temporal – mandibular joint.

MOUTH AND ORAL CAVITY

Examination

Consistently we examine the labia, dents, tongue, mucus membrane of the cheeks, hard and soft palate, palatine arches and back wall of a pharynx.

Normally the labia have the correct form, moderate thickness, complete integrity of the margin, red, it of rosy-red color, clean. The mouth aperture is symmetric. Nasolabial folds are manifested identical on both sides. In some cases the mouth is opened or semi opened during labored nasal breathing, difficult stomatitis, and difficult dyspnea. Normally it is possible to open the mouth 2-3 horizontally inserted fingers.

Thickening of the labia (macrocheilia) is characteristic of the patients ill with acromegalia and myxedema. Unexpected originating of thickening of the labia is caused by allergic or by angioneurotic edema. The paleness of the lips identifies anemia, and cyanosis identifies pathology of respiration.

State of the intrinsic surface of the labia is determined by such method. With the thumbs and index fingers of both hands we grasp external parts of the lower lip turning them down. It's possible to make with the help of two spatulas. In the examination it is necessary to pay attention to the color of mucous membrane, defects of an integument (fissures, ulcers), inspissation. Having detected inspissation, which is considered to be cancer of the labia, such method will permit to determine the inferior border of the tumor. Uncovered tooth roots and formation of dental calculus accompany atrophic processes on gingivae. The purulent discharge from the free margins of the gingivae indicates the development of alveolar pyorrhea.

Condition of teeth is evaluated by examination with the help of spatula, consistently pulling the cheeks or labia outside (fig. 14).

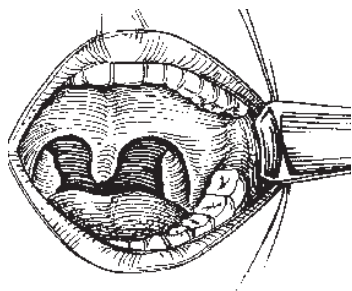


Fig. 14. Examination of the oral cavity.

Use the tooth formula:

87654321 12345678

87654321 12345678

The affected teeth in the formula are lined with a round. Simultaneously mucous of the cheeks is examined. In the sepsis patients in the postoperative period on a mucous of the mouth it is possible to find the appearance of "thrush" as a plenty of white superficially placed pus, which reminds grains of "sour" milk.

Sometimes the small size of the teeth (microdentism), their transversal striation, anomaly of two upper incisors, domed, (the so called moon's teeth), considerably remote one from another is determined. Combination of these characteristics together with the parenchymatous keratitis and changes of the middle ear (hearing loss) the triad Hetchinsona – speaks about congenital syphilis.

The multiple and fast destruction of the teeth because of caries occurs in diabetes mellitus.

Then the doctor asks the patient to open his mouth, maximum to put out the tongue, to touch with the tongue the right and left cheeks. It allows determining the possibility of complete opening of the mouth, position and volume of motions of the tongue, its size, form, character of its surface and state of gustatory. The patient holds his tongue near a palate, and the doctors with help of spatula examines angles of the mouth, forward and back surfaces of the teeth, the gums, inferior surface of the tongue, and its sulcus. The patient puts his tongue down and the doctor putting the spatula on the middle part of it examines a palate, palatine arches and back pharyngeal wall.

The changes and properties of the tongue give series of valuable indications, concerning many diseases. Characteristic putting out of the tongue is slow, with a tremor in difficult infection contaminations, septic states. It is very vigorous in the neurotics who have got used to inspect it. The putting forward of the tongue with a deflection to the sides is observed in paralyses of sublingual nerve. The look of the tongue is characteristic of some diseases:

1. It is clear, wet and red – during ulcer of the stomach.
2. It is thickly coated near its root and at the center, but it is red on the edges and at the apex – in typhoid.
3. It is bright red, velvet – during scarlatina (crimson tongue).
4. It is dry with dark-brown fur, cracked, that hardly moves – in serious infections and intoxications.
5. It is pale, smooth, shiny, as if it is polished, with nodules, ulcers on its edges – during malignant anemia (Hunter's glossitis).

Mouth odor (faetor ex ore):

1. Putrid (fetor), except for the local causes (cariou dentis, the alveolar pyorrhea, purulent fuses in tonsils), can be caused by lungs gangrene, esophageal diverticulum.
2. Sweet, that reminds a scent of Chloroformium, apples or hay, scent of acetone is observed mainly in hyperglycemic coma.
3. Urinary (ammoniacal) – is in azotemic uremia.

Changes of a voice.

Loss of voice (aphonia) indicates a paralysis of vocal chords owing to the paralysis of a rotary nerve of the larynx (caused by the

pressure of aneurysm, tumor on it). Weakening of voice is frequently seen during general weakness in serious septic diseases. Gruff voice identifies affected larynx.

PROCEDURE OF EXAMINATION OF THE NECK

Topographical data

The neck is divided into forward (regio colli anterior) and back (regio colli posterior) parts. The border is the line between coracoid (uniting a process of the scapula). Back part – nucha (cervix or regio nuchae) is placed between linea nuche superior and a horizontal line, which passes through a spinous process of the VII cervical vertebra. The forward surface of the neck, both to the right and to the left of an middle line, with the help of sternocleidomastoid muscle is divided into two large triangles: internal – with a basis in the region of a mandible and external – with a basis in the region of a clavicle. In an intrinsic triangle a submandibular region limited by the mandibular and two legs of the digastric muscle, and carotical triangle – between the back belly of the digastric muscle, sternocleidomastoideus muscle and proximal part of musculus omohyoideus are determined. The middle surface of the neck is divided into the following regions: regio submentalis, laryngea, trachealis.

Examination

The neck is examined from different directions at direct and side illumination. The attention is paid to its form, the contours, presence of changes on the skin, edema, thickening of veins, evident pulsing of arteries, and also position of the larynx and trachea. Examining forward surface of the neck a sternocleidomastoideus muscle is determined as the cylinder, which begins behind mandible and goes down obliquely, medial and is fixed to the clavicle and to sterno-clavicular synchondrosis.

The middle of the medial margin of sternocleidomastoideus muscle is the place of pulsing of carotid artery. A sharply seen pulsing of carotid arteries ("their dancing") is a characteristic of failure of aortal valves.

The examination permits to find out sharp even enlargement of the size of the neck during abrupt compression of the thorax and

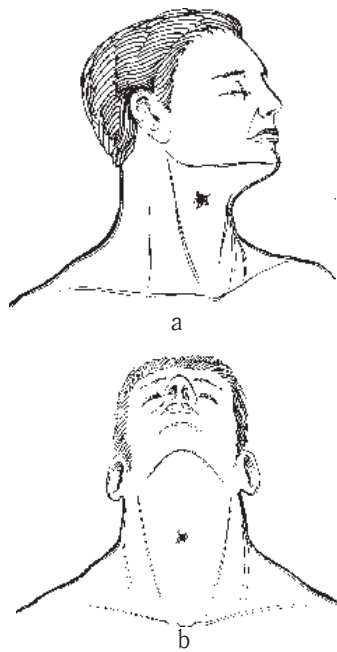


Fig. 15. Fistula of the neck:
a) – lateral; b) – median.

rising of intrathoracic pressure (traumatic asphyxia), in compression of mediastinum by tumors with disorder of blood and lymph circulation (collar-like neck); unequal enlargement in a submandibular region and lateral parts of the neck in the result of pathological process of lymph nodes (tubercular lymphadenitis, lymphogranulomatosis, leukemia, lymphosarcoma). In the region of the forward and lateral surface of the neck during examination fistulas of a various origin can be revealed (fig. 15, a and b) due to a tubercular lymphadenitis, purulent osteomyelitis of vertebrae, actinomycosis, foreign bodies and congenital.

It is necessary to determine the character of a granular tissue around fistulas (flat, hyper granulations, jelly-like, pale, hemorrhagic, bright-red), also amount and quality of discharges. Thick creamy pus with an unpleasant odor is seen in purulent infection; infrequent watery inodorous one with elements of the caseous decomposition – is in tuberculosis; pus with presence of yellow or white-gray grains is during actinomycosis. The mucous discharges are characteristic of congenital fistulas, which appear as a result of an irregular reverse development of the neck embryonal channels. Lateral fistulas, posed near the forward edges of a sternocleidomastoideus muscle, produce small quantity of a mucous secret; during suppuration the discharges have mucous-purulent character. The hyperemia and cutaneous dropsy develop around the fistulous foramen. The median fistulas take the beginning from blind creation of a root of the tongue; external foramen of fistula is located little bit below the tongue bone.

The enlargement of a forward surface of the neck lower of a cartilage indicates, as a rule, pathology of a thyroid gland. A goiter (struma), the tumors, inflammation processes result in dilating its

borders, the isthmus can be spread to a breast bone and up to the cartilage. In presence of the tumor on a forward surface of the neck concerning a position of a thyroid gland a sign of mouthful (of swallowing) of water is checked. At the moment of fluid swallowing (by the patient) the tumor connected to a thyroid gland moves together with the larynx at first upwards, and then downwards.

Palpation

On palpation it is necessary to determine borders of tumescence, its consistence (mild, solid, nodular), location of the trachea concerning the middle line, shift of creation in vertical and horizontal directions.

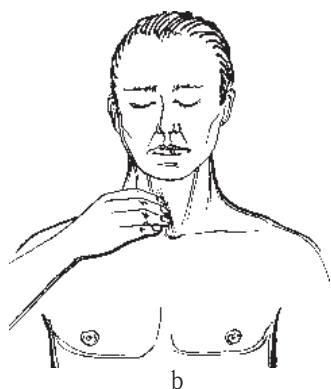
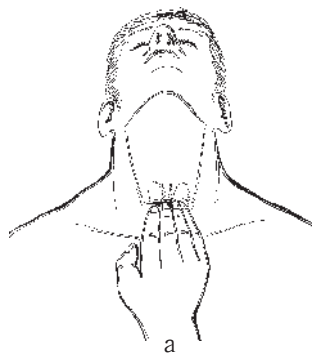


Fig. 16. Palpation of the thyroid gland: a) – isthmus; b) – lateral lobes.

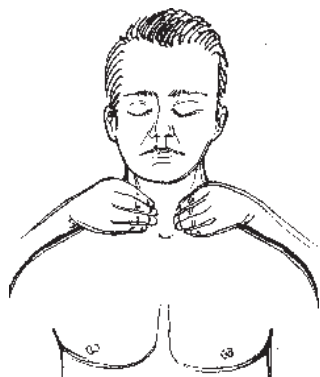
The top poles of gland are well palpated, and the inferior ones can be behind the breastbone and they should be palpated during a swallowing. The palpation of the thyroid gland is carried out in the following way. At first the doctor stands in front of the patient and fixes his neck with the left hand, and then puts the palm of his right hand lengthways, with the fingers upwards, on the forward part of the neck. He palpates a cartilage, asks the patient to move his head slightly up. After that the doctor slips with his fingers downwards on a surface of the thyroid cartilage and further on the arch cricoids cartilage. Immediately under cylinder of an isthmus of the thyroid gland is horizontally situated. Palpating an isthmus, its width, consistence, and mobility during swallowing is determined. After that the lateral parts are palpated between intrinsic margin of a sternocleidomastoideus muscle and the trachea, is immediate above the upper edge of an isthmus (fig. 16).

The described method of palpation of the thyroid gland should be followed by such procedure: the patient sits on a chair,

the doctor standing behind the patient covers the neck with his both hands, so that the thumbs were behind, and the other fingers laid on a forward surface. After that the doctor finds a cartilage, isthmus of the thyroid gland with the help of his middle fingers. The tissues, which are situated above the trachea, are also palpated. The fingers are placed on the sides of the trachea to internal edges of sternocleidomastoideus muscles. Palpating by such method, it is necessary, for the patient to lower his head slightly for a release of a sternocleidomastoideus muscle. In order to determine the mobility of the thyroid gland the patient is asked to make a swallow (fig. 17).



a



b

Fig. 17. Palpation of the thyroid gland. Definition of its mobility.

Normally parts of the thyroid gland are not palpated, and the isthmus is determined as transverse laying cylinder, smooth, painless, homogeneous consistence.

The dimensions of a thyroid gland are divided into V degrees:

0 the thyroid gland is not palpated

I the thyroid gland is not visible, an isthmus, and sometimes -lateral parts are palpated;

II the thyroid gland is easily palpated, but contours of the neck are slightly displaced, the gland is visible at swallowing;

III enlargement of the thyroid gland is visible not only at swallowing the contours of the neck are also changed;

IV obvious struma, sharply changed configuration of the neck;

V a struma of the large dimensions.

Increase of the thyroid gland of I-II degrees is considered to be hyperplasia, enlargement the thyroid gland of III-IV-V degree is the obtrusive struma.

According to their character the enlargement of the thyroid gland are distinguished:

a) The diffuse form, when the thyroid gland is evenly enlarged;

b) The nodal struma, when there is one or several nodes palpated in the tissue of the thyroid gland;

c) Mixed form, when the nodes and parts of the even enlarged tissue of the thyroid gland are palpated.

METHODS OF EXAMINATION OF MAMMARY GLAND (BREAST)

Topographical data

The mamma is situated between III and VII ribs length wise and forward axillary and parasternal lines in width. It is circumscribed by fatty tissue, fibrous intersection (Cooper ligaments) is considered to be its frame. The back surface of the mamma lies on a fascia of the greater pectoral muscle.



Fig. 18. Sectors of the mamma.

Ducts of breast opened on the papilla, which is surrounded by pigmental region (areola). The lymph drainage is carried out basically to axillary, subscapular, subclavial and retrosternal lymph nodes.

The blood supply is carried out in the basin of internal arteries of mammary gland (arteria mammaria interna), the perforating vessels of which go to the mammary gland through II-IV intercostal spaces.

Examination

Conditionally the mamma is divided by the vertical and horizontal lines, which go through the papilla, into four sectors: upper-external, upper-internal, lower-external and lower-internal (fig. 18).

At first the doctor examines, both mammas comparing, them, ascertains their form, size, symmetry, presence of deformations, retraction of the papilla, changes of coloring of the skin, presence of fistula.

The presence of hyperemia indicates the inflammatory process in the mamma

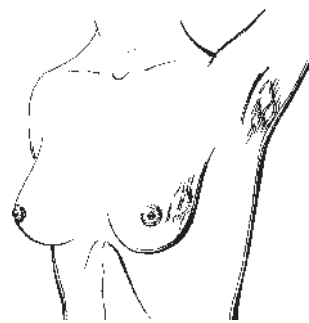


Fig. 19. Examination of a tumor and axillary region at rising of an arm.

(mastitis). Typical retractions like "citric peel" on the skin, decrease of an elasticity of the latter are characteristic of malignant processes.

It is necessary to ask the patient to lift his arm, so that to see the outline of a tumor and the armpit with enlarged lymphatic nodes more exactly (fig. 19). The form of the papilla and its contours should be also taken into consideration. A retraction of the papilla and deformation of the periareolar region are inherent in malignant process (growth), on the contrary – the diverticulum is more characteristic of purulent – inflammatory defects of the mammary gland.

Palpation

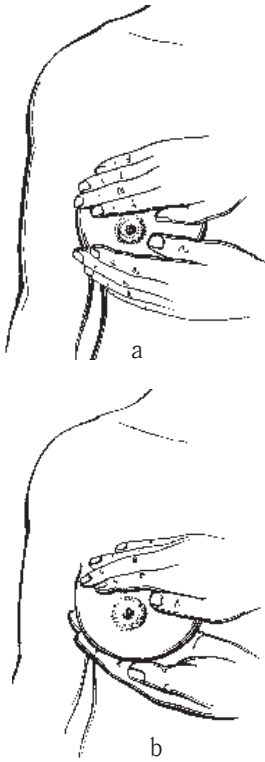
It is carried out, both in the vertical, and in horizontal position of the patient. The tissue of the mamma is pressed against the thoracic wall by the palmar surfaces of fingers (fig. 20a), or it is palpated between the two palms (fig. 20b). It makes possible and better determining of the presence of inspissations and nodes.

Simultaneously the dermal temperature, elasticity, consistence and character of the surface of a mamma should be ascertained. At presence of pathological creations their size, mobility, binding with neighboring tissues and pain are determined. In fibroadenomas are inherent the spherical form, solid consistence, mobility and painless.

An unequal surface, dense – elastic consistence without precise borders, mobility, slight pain, absence of binding to skin – are typical for the nodal form of mastopathy; a tuberous surface, solid consistence, binding to the neighboring tissues, retraction of the papilla or the skins – for a malignant tumor.

Fig. 20. Palpation of the mamma: a) – with a compression to the chest; b) – between two palms.

To define germinations of the tumor in the neighboring tissues is possible by grasping the tumor with two fingers, and displace it in vertical and horizontal directions at lowered and at lifted limb (fig. 21).



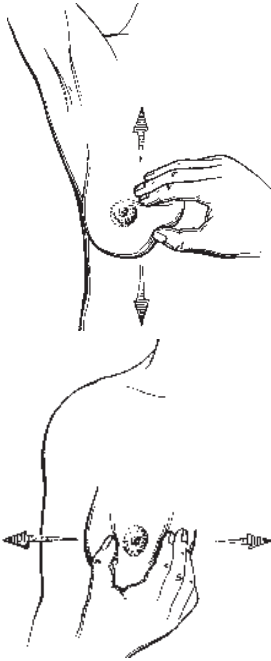


Fig. 21. Determination of the germination of the tumor.

The careful inspection of regional lymph nodes and their exact characteristic are very important. Decisive for the diagnosis and accordingly for tactics of treatment is a morphological verification of the diagnosis. With this purpose before the beginning of the treatment the doctor should do a puncture biopsy for cytological research, or sectoral resection of the mamma with urgent histological research of the removed, during the operation, tumor.

Computer tomography, ultrasonic research, mammography enable to reduce diagnostic mistakes to a minimum.

EXAMINATION OF THE CHEST

Topographical data

A sternum, thoracic department of a vertebral column and twelve pairs of ribs and ribs cartilages form the thorax. It has two foramens: the upper and the lower.

The inferior foramen is limited by the inferior edge of the XII thoracic vertebra, inferior edge of the XII rib; end of the XI rib, costal arch and by a xiphoid process. On a scapular line of a rib the angles are formed.

There are such regions on the chest, which have characteristic features of the constitution:

1. The upper arm – supraclavicular fosses, suprascapula parts, edge of trapezius muscle.

2. The front surface – the breast bone (dextral and left edge, handle, jugular notch, Ludovig's angle, body, a xiphoid process) clavicle, sterno-clavicular synchondrosis, subclavicular fosses, mammas, papillae, ribs, intercostal spaces, thoracic muscles.

3. The lateral surfaces – axillary fosses, ribs, intercostal spaces.

4. The back surface – scapula (crest, inferior angle, medial and lateral edges), ribs, intercostal spaces, interscapular space, spinous processes of vertebrae.

There are 10 topographical lines on the chest, which are used as orientation.

On the forward surface:

1. Forward median (odd) – passes along the middle of the breastbone.
2. Pectoral – even line passes along the right and left edge of the breastbone.
3. Prepectoral – even one goes between the breast bone and median-clavicular lines.
4. Median-clavicular, even line, in men it is papillary, passes through the middle of a clavicle (fig. 22).

On the lateral surfaces:

5. Forward axillary – even line passes along the forward edge of the axillary fossa.
6. Middle axillary – even goes through the highest point of the axillary fossa.
7. Back axillary – even is on the back edge of the axillaries fosse. (fig. 23).

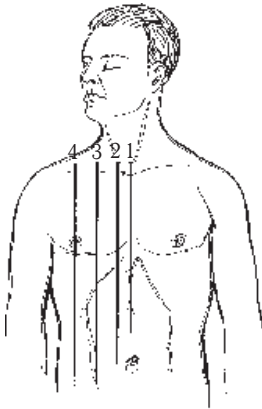


Fig. 22. Topographical lines on a forward surface of a thorax: 1 – forward median; 2 – pectoral; 3 – prepectoral; 4 – median-clavicular (papillary).

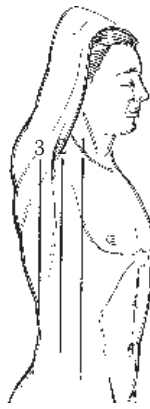


Fig. 23. Topographical lines on the lateral surface of the chest: 1 – forward axillary; 2 – middle axillary; 3 – back axillary.

On the back surface:

8. Scapular – even goes through the inferior angle of the scapula at the lowered arms.
9. Back median (odd) – passes along spinous process of vertebrae.
10. Paravertebral – even is in the middle between back median and scapular lines. (fig. 24).

The general examination of the thorax is carried out in the certain sequence.

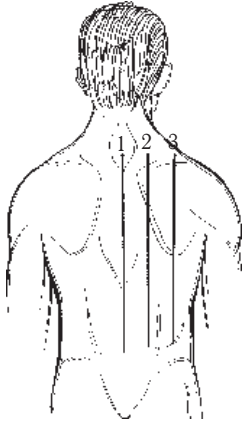


Fig. 24. Topographical lines on the back surface of the thorax: 1 – back median (backbone); 2 – columnar; 3 – scapular.

Characteristics of the complaints and anamnesis

Dyspnea, tussis, pneumorrhagia, pain in the thorax belong to the basic complaints, typical of the diseases of respiratory organs, are a dyspnea, tussis, pneumorrhagia, pain in a thorax.

Dyspnea – is characterized by disorder of frequency, rhythm and depth of breathing, intensified work of respiratory muscles.

Dyspnea can be subjective, when there is labored breathing without change of its frequency, depth; objective – change of frequency, depth and respiratory rhythm; the mixed one is – at presence of features of subjective and objective dyspnea.

Dyspnea is distinguished as physiological – at physical job, exaltation and as pathological – in diseases of the respiratory, cardiovascular and hemopoetic systems.

The tussis (cough) is a protective reaction on accumulation in the lung airways of foreign bodies, slime. It has its own features in different diseases. It is necessary to find out its character, duration, time of appearance. Tussis can be dry, wet, constant and periodic, loud and silent, short or tussiculation.

Pneumorrhagia is observed in diseases of the upper respiratory ways, lungs, and cardiovascular system. During tussis the blood is excreted with expectorations. The blood can be changed during pneumorrhagia.

A pain appears owing to pathological process in the chest or in the organs of the thoracic cavity, and can also irradiate from other regions. It is necessary to distinguish a pain according to its origin, localization, character, intensity, duration, and also to take into account the connection with respiration, tussis, locomotions.

Examination

In examination the form and symmetry of a thorax are visually determined. The attention is paid to isolated just or sunken parts

respiration rate, rhythm, depth and equal participation of both halves of the thorax.

The chest is examined at direct and side illumination and in a certain sequence: – region of clavicles, breastbone, sternoclavicular synchondrosis, supraclavicular and subclavicular recess, a fosse of Morengeim (between deltoid and large muscles). The anterior and posterior views of both halves of the thorax, intercostal spaces (width, degree of jut), form of epigastric angle (acute, obtuse – in degrees) (fig. 25).

The more obtuse epigastric angle and more flat Ludwig's angle are observed in men more often, than in women. While gauging round dimension of the thorax it is important to compare the distance from the middle of the breastbone to spinous processes on both sides.

Normally the chest has correct, symmetric form. The changes of the form can be caused by pathology of the organs of the thorax or irregular formation of the skeleton during its development.

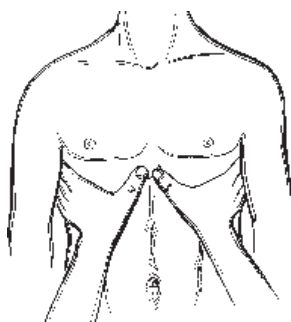


Fig. 25. Definition of epigastric angle.

Inherent anomalies of development of the chest: are the following: the hollowed inferior part of the breast in the form of a funnel ("the breast of the shoemaker") or "funnel" chest; the longitudinal pectus excavatum breastbone can be observed ("boat-like chest"). In rachitis the thorax as if pressed from both sides, the sternum is prominent, like keel ("keeled chest," "chicken breast").

Respiration rate is determined by watching respiratory excursions of the thorax. It is necessary to ascertain, whether one of the halves or some region lags behind in the act of respiration.

The lag of the thoracic wall in the act of respiration, frequently with prominent intercostal spaces, as a rule, takes place during exudative pleuritis.

The restriction of motions of one half of the chest combined with prominent intercostal spaces and shoulder-ptosis, displacement of a scapula are observed at decrease of volume of the pleural cavity after the operation – pneumonectomy.

The thorax lags behind in respiration in fractures of ribs, when the respiration is superficial because of intensifying pain during a deep inspiration.

In disorder of passability of the upper respiratory ways (the larynx, trachea, the bronchus) auxiliary muscles take part in respiration. The respiration becomes strengthened, intense with whistling hums, inhalation is prolonged.

The appearance in men of a thoracic type of respiration, which is characteristic of women, can be caused by acute pathology of the organs of the abdominal cavity.

Palpation

On palpation the examiner determines ribs, intercostal spaces, pectoral muscles, degree of a resistance of the thorax, phenomenon of voice tremor.

The patient is examined when he is standing or sitting. In normal the thorax is resilient, pliable, particularly in lateral part. Resistance of the chest is determined by resistance at pressing on it in different directions (fig. 26, a and b).

Rising of a rigidity of the chest is observed in exudative pleuritis, big tumors of the lungs, emphysema, ossification of cartilages in old age.

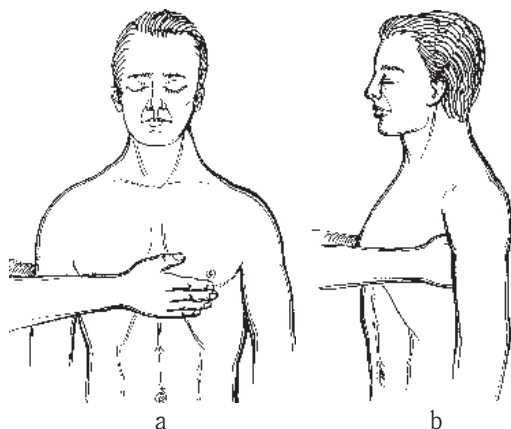


Fig. 26. Ascertaining of resistance of the thorax: a – in front-back direction; b – in transverse direction;

Determination of retrosternal pulsation.

The patient with his head inclined, the doctor puts the finger in a bulbar fosse. The pulsing of aorta can be felt which indicates its dilating.

Palpation of the clavicles

The clavicle is grasped with the thumb and index finger and palpated on its length. On suspicion of fracture of a clavicle the palpation is carried out

very carefully because of sharp pain and possibility of damaging of subclavicular vessels by osteal fragments. It is possible to find out typical displacement of an intrinsic fragment upwards and backwards, and external – downwards and forward.

Palpation of a supraclavicular fosse

The comparative determination of lymph nodes on the both sides is made. It is important at presence of malignant tumors of the mamma, lungs.

Sometimes it is possible to find out flat osteal creation, which depends on the presence of an additional cervical rib. Pain at pressing on intrinsic part of supraclavicular fosse (location of brachial plexus) can be indication of plexitis.

Palpation of the ribs and intercostal spaces

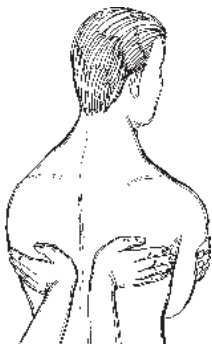
On palpation the thorax is painless, the surface of not damaged ribs is smooth. It is necessary to remember that each rib should be palpated from the breastbone to the column. The attention is paid to the place of synchondrosis of the ribs and cartilages (rachitic juts), osteal thickenings, localized pain. A tender crepitation is determined as a result of hypodermic emphysema in fracture of the rib with damage of the pleura and lung. More rasping crepitation during respiratory motions indicates fracture of the ribs (osteal crepitation). Determination of osteal crepitation is better to carry out after novocainic blockage of the place of the fracture. In order to identify which rib is damaged, the calculation is made from above, front, beginning from the clavicle. The count can be made from back, from below, beginning with the XII rib. The isolated tumescence and pain of intercostal spaces can indicate the presence of inflammation process (purulent focus) in the pleural cavity.

Definition of the voice tremor

The voice tremor occurs at conversation, the fluctuation of the thorax, which is transferred from vibratile vocal cords, are palpated. The patient with a low voice repeats words, which include the letter "R", for example "thirty three". The identifying is made with the help of the palms put close on to the both sides of the chest symmetrically (fig. 27; a and b), (fig. 28; a, b and c). Intensifying of the voice tremor occurs in infiltrative processes of pulmonary tissue (pneumonia, above

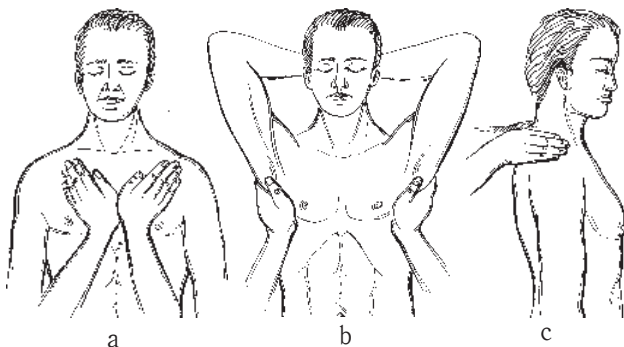


a



b

Fig. 27. Definition of the voice tremor: a – in interscapular space; b – in infrascapular regions.



a

b

c

Fig. 28. Definition of the voice tremor: a – on the front surface of the thorax; b – on the lateral surfaces of the thorax; c – above the apexes of the lungs.

caverns and bronchoectasia). Weakening of the voice tremor, or its absence is observed at presence of fluid in the pleural cavity, tumors of the pleura, obturation of a lumen of a bronchus.

Percussion

The percussion of the thorax enables to determine the borders of patient's lungs and heart. A relative percussion is carried out consistently on the front, lateral and back surfaces of the chest symmetrically on the both sides on topographical lines, and also topographical percussion that is consecutive delimitation of the borders, mobility of the inferior edges, height of the apexes of the lungs.

By means of percussion of the chest, first of all, the borders of the lungs and heart are determined. For delimitation of absolute dullness of the heart weak strokes are made, for revealing relative dullness stronger blows are struck.

The mobility of the pulmonary margins is determined with the help of percussion of the inferior parts of the chest at an inhalation and expiration. We distinguished a clear pulmonary sound in normal pulmonary tissue; box like- in emphysema; a high thympanitis – in pneumothorax; blunt sound – in inspissation of the pulmonary tissue,

exudative pleuritis, and tumors. Presence of fluid and air in the pleural cavity gives the border of an obtusion as a horizontal level. At presence fluid without air the border of an obtusion will be on the Damuazo line, slanting line with the highest point – on the back axillary line.

Auscultation

By means of listening to the heart the cardiac tones are determined, which can be strengthened or weakened. I and II heart tones are auscultated on the apex of the heart, aorta, and pulmonary artery. The heart murmurs (systolic and diastolic) and pericardial rub can be heard.

Lung auscultation is carried out on symmetric points in front and back, from upwards to downwards. In norm the basic respiratory hums (vesicular respiration) is auscultated. In pathological processes – additional, or collateral respiratory hums are listened for.

Vesicular respiration arises owing to fluctuation of the alveolar walls. It can vary from intensifying to weakening. These changes can be physiological and pathological.

Physiological intensifying of vesicular respiration is observed in children, and the weakening is observed in thickening of the thoracic wall.

The pathological weakening of vesicular respiration occurs in inflammations, and pathological intensifying of vesicular respiration is caused by changes of phases of respiratory hum during an expiration and inhalation.

Bronchial respiration is respiratory hums, which arise in the larynx and trachea. Normal bronchial respiration is heard above the larynx, trachea, and bifurcation of the trachea.

Pathological bronchial respiration is heard in consolidation of pulmonary tissues and filling of alveolus with exudates.

The collateral respiratory hums – rhonchuses, arise at development of pathological process in tracheas, bronchus, in a parenchyma lung.

The dry rhonchuses: basic condition of their originating is total or narrowing of a lumen of bronchi.

The wet rhonchuses result from the concentration of fluid secret in bronchi.

The crepitation – rattle, which unlike rhonchuses, arises in alveoli.

The pleural rub – in heard in morbid conditions, which result in changes of properties of the pleura, owing to which during locomotions there appears an additional hum – "pleural rub".

Special procedures and methods of examination

Pressing on the rib, on its length

The doctor presses by his second, third and fourth fingers on the rib at some distance from the place of a trauma or from a tumescence (osteomyelitis). At presence of fracture of the rib or of inflammatory changes it is marked by a pain.

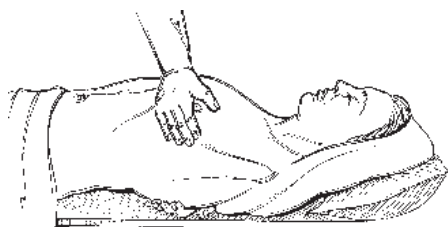


Fig. 29. Compression of the thorax in forward-back direction.

Compression of the thorax

The chest is compressed in forward-back direction between the breastbone and column by palms until the appearance of pain sensations (fig. 29).

This procedure is used when there is suspicion on fracture of ribs. During compression the curvature of the I-VIII ribs varies, the painful sensations strengthen in the place of fracture.

Gauging of circular dimension of the chest

In men it is carried out on the level of IV rib cartilage, in women – on inferior fold of the mamma.

At presence of tracheobronchial fistulas such tests and inspections are used:

1. In strained condition with the closed mouth the air comes from the fistula.
2. While smoking the smoke comes through the fistula.
3. At lifting to the fistula the lit match the rejection of a flame is observed.
4. A legible picture in bronchial fistulas gives fistulography.

Tests on definition of fluid

Together with the clinical signs the Petrov's and Effendiev's tests are also important.

Petrov's test. The test-tube filled with 3-4 ml of a puncture portion and then dissolved in 5 times by distilled water. The examiner shakes the mixture and waits for 2-3 minutes. Non-infected fluid will be clear-rosy, infected – muddy-rosy.

Effendiev's test. The examiner fills the test-tube with 5-10 ml of bloody puncture portion and leaves it for 2-3 hours. The centrifugation can be made for an acceleration of process of sedimentation. The interrelations of sediment and liquid part of the blood, presence and degree of hemolysis, dimensions of the layer of leucocytes are determined. If the interrelation is 1:1, hemolysis is absent and a layer of leucocytes is not found out, it is possible to consider, that a hemothorax is aseptic.

In increase of the fluid layer (1:6 – 1:10), evident hemolysis and leukocytic layer – hemothorax is infected.

Functional tests on definition of functional capacity of the heart

Shtange's test. After a deep inhalation the patient holds his breath. The function of the heart is considered to be good, if the breath is held for 40 seconds and more.

It is satisfactory – when it is held for 30 seconds.

It is unsatisfactory – when it is held for 20 seconds and less.

Soabraze's test. After a deep expiration, if the patient can hold his breath for 30 seconds – the function of the heart is considered to be good, for 20 – satisfactory, and for 10 and less – it is unsatisfactory.

Kantsenshtein's test. When the patient is in the lying position the examiner defines frequency and quality of his pulse, and then the patients holds his both legs, straighten in knee joints, per 1 minute under a right angle and again the frequency and quality of pulse are determined. The work of heart is satisfactory, if the pulse became more full and rare.

Laboratory and apparatus methods of examination

Puncture of the pleural cavity

It is carried out after roentgenoscopy or roentgenography is made. The puncture is done somewhat below the upper level of absolute dullness. The best place for puncture is – on the back axillary or scapular line between the VIII and IX ribs or on the middle axillary line between the VII and VIII ribs.

The puncture should be carried out under local anesthesia. The piercing is made on the top edge of the rib, in order not to damage an intercostal neurovascular fascicle. At injecting a needle is constant the piston of a syringe is constantly pulled on itself. Having received

the fluid, it is necessary to examine attentively its color, character, scent, and presence of clots. The puncture portion is examined cytologically and bacteriologically. It is important to answer a question on apposition of an infection.

Roetgenoscopy

The roentgenoscopy, roentgenography in different projections in order to receive aiming snapshots, tomography, computer tomography, bronchography are applied to specification of the diagnosis.

Bronchography

This contrast research, which is necessary in diseases of a bronchial arbor, namely: bronchiectasia, tumors, purulent diseases of the lungs.

Ultrasonic research (Ultrasonography)

It enables to determine the presence of fluid in the pleural cavities, consolidation and emptiness in pulmonary tissue, functional – morphological changes of the heart and large vessels of mediastinum.

Now endoscopic methods, such, as thoracoscopy and bronchoscopy, are widely applied.

METHODS OF THE ABDOMEN EXAMINATION

The topographical data

Borders of the abdomen

External superior border of the abdomen is xiphoid process of the breastbone, margin of costal arches – from the front; edge of the XII ribs, XII thoracic vertebra from behind. The external inferior border of the abdomen is formed by a line, which passes from a symphysis of pubic bones to the pubic tubercles, further to the anterior superior iliaca spina, on its crests and base of sacrum bone.

The abdominal cavity is limited: abdominal walls from the front, sides and from behind; by diaphragm from above, from below it passes in pelvis cavity.

The abdominal cavity has two parts: abdominal cavity (circumscribed by the peritoneum) and retroperitoneal space.

The peritoneal cavity has two floors: the upper and lower (the border between them is mesentery of transverse colon).

The walls of the abdomen are dividing into two departments: forward-lateral and back (lumbar regions). The border between them

is the right and left back axillary lines. For diagnostics of diseases of organs of the abdominal cavity it is necessary to know spatial relations of the organs and their projection to the abdominal wall. We use segmentation of the forward-lateral wall of the abdomen into regions, formed by crossing of the lines:

- a) Inferior costal (l.costalis inferior seu bicostalis) – unites the lowest points of the ribs arches;
- b) Intermediate surface of the crests of the ilium (l.biliaca seu cristarum) – passes through the highest points of crests of iliac bones.

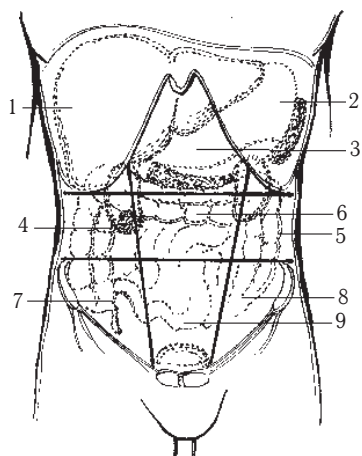


Fig. 30. Regions of the anterior-lateral wall of the abdomen and projection of some organs on it:

- 1 – right hypochondrium;
- 2 – left hypochondrium;
- 3 – epigastric region;
- 4 – right lateral region;
- 5 – left lateral region;
- 6 – umbilicus region;
- 7 – right ilioinguinal region;
- 8 – left ilioinguinal region;
- 9 – suprapubic region

So, three regions distinguished: the upper – epigastric (regio epigastricum), middle -celiac (regio mesogastricum) and inferior – hypogastrium (regio hypogastricum).

The above-mentioned regions are divided into three regions each: by two vertical lines, passing along external edges of muscles rectus abdominis.

- epigastric is divided into: epigastrica and both right and left hypochondria;
- celiac into: umbilical and both right and left lateral regions;
- hypogastrica into: suprapubic and both right and left ilioinguinal regions.

Let's consider projections of the organs of the abdominal cavity on a front-lateral wall of the abdomen (fig. 30) in each of the above-mentioned nine regions: – epigastric region (reg. epigastrica) – stomach, the upper horizontal and descending parts of duodenum, the upper parts of the head and body of pancreas, the right part and left part of the liver, aorta, the abdominal aorta with its branches, a portal vein, and vena cava inferior;

- right hypochondria (reg. hypochondriaca dextra) – the part of a dextral part of the liver, gallbladder, hepatic flexion of transverse colon, the upper department of right kidney);
- the left hypochondria (reg. hypochondriaca sinistra) – part of the body and fundus of the stomach, lien, cauda pancreatis, splenic flexion of transverse colon, the upper part of the left kidney);
- umbilical region (reg. umbilicalis) – inferior part of the head and body of the pancreas, greater curvature of the stomach at its filling, transverse colon, loops of the small bowel, greater omentum, aorta, superior mesenteric artery with its branches and vena cava inferior;
- dextral lateral region (reg.lateralis dextra) – ascending colon, part of loops of the small bowel, right kidney with ureter);
- left lateral region (reg.lateralis sinistra) – descending colon, some part of loops of the small bowel, left kidney with a ureter;
- suprapubic region (reg.pubica) – loops of the small bowel, urinary bladder, uterus);
- dextral ilioinguinalis region (reg.inguinalis dextra) – caecum with appendage, final part of ileum, dextral ureter, dextral uterine appendages, dextral iliac vessels);
- left ilioinguinal region (reg.inguinalis sinistra) – sigmoid colon, left ureter, left uterine appendages, left iliac vessels.

These projections depend on the constitution and age of the patient.

For exacter definition of localization in the given regions the examiners use conger vertical cognitive lines of forward and lateral surfaces of the thorax: forward median (white line of the abdomen); pectoral, prepectoral, median-clavicular, forward axillary, middle axillary and back axillary. The crossing of forward median and umbilicus (horizontal) lines divides umbilical region into 4 squares: dextral (the upper and inferior) and left (top and inferior).

Examination of the abdominal cavity

Examination

The abdomen is examined in vertical and horizontal position at direct and sidelight. All parts of the patient's body should be accessible to the examination. The most often used position of the patient " is

lying on the back", legs slightly bent; arms put along the trunk. The doctor sits at the right (at the left) from the patient (right-hander, left-hander), the abdomen of the patient is naked, including inguinal regions and the upper third part of the hips. If it is necessary the polypositional examination of the patient can be used in the positions: "on the side", "on his abdomen", "standing". The attention is paid to the form, dimensions of the abdomen, symmetry of its regions, presence of cicatrixes, diverticulums, visible peristalsis, spreading hypodermic venous network.

The even enlargement of the abdomen can be in: obesity, meteorism, presence of free fluid (ascites), and late pregnancy. The asymmetry of the abdomen due to the jut of forward abdominal wall in certain region is an attribute of enlargement of organ or its cyst, or tumor of the abdominal cavity.

Local diverticulum of the abdominal wall occurs in hernias in typical regions, in (near) postoperative cicatrixes or indicate the presence of nonmalignant tumors (fibromas, lipomas) or remote metastases of malignant tumors of the organs of the abdominal cavity (stomach).

Even hollow of the forward abdominal wall is characteristic of exhaustion and dehydration of an organism, and spastic reduction of its muscles can be attributes of tetanus, meningitis, and plumbum-intoxication colic. The sharp retraction of the belly button is quite often caused by a metastasis of a malignant tumor in it.

The lateral illumination in the "laying" position permits to find out peristaltic waves, which indicate an obstacle for moving of alimentary masses on a gastrointestinal tract (in stenosis of stomach pyloric part).

Hypodermic venous network normally is not visible, but its appearance indicates to a portal hypertension because of cirrhosis of the liver, clottage or compression of the portal vein from the outside, and also clottage of hepatic veins, which run in the inferior vena cava (Badda-Kiari disease).

The enlargement of the veins of the forward abdominal wall above the belly button – is indication of anastomose with the vena cava superior, and under the belly-button – is characteristic of

anastomose with system of the vena cava inferior. The stagnation in the portal vein sometimes results in appearance of sinuous veins, which spread from the belly button, through regeneration of passage of normally obliterated umbilicus vein. Such a drawing received the name "caput medusae".

Presence of postoperative cicatrixes on the skin of the abdomen, their localization, form give imagination about character of the past surgical operations, its probable complications, such, as illness of a peritoneal adhesions.

The revealing of hyperpegmentation in certain regions of the abdominal wall, because of using a hot-water bottle (as a result of deposit of hemosiderin from hemolysed erythrocytes), indicates the presence of a long pain syndrome in the patient.

Examining the forward abdominal wall, it is necessary to specify its participation in respiratory movements. Usually in men is abdominal type of respiration, and in women it is thoracic or blended. In the phenomena of irritation of the peritoneum, the abdominal wall does not take part in respiratory movements.

Respiratory (active) displacement of tumors.

In the presence of tumor in the field of the forward abdominal wall the doctor should pay attention, whether it displaces during respiration. The tumors, which are not connected with the forward abdominal wall (stomach, intestine), do not displace on the other hand, tumors of the liver, gallbladder, and lien are displaced during respiration.

For determining the diastase of the direct muscles of the abdomen it is necessary – to offer the patient, lying on his back, to lift slightly his trunk, at the same time a keeled diverticulum will appear in the place of defect on the middle line.

Palpation

Superficial palpation of the abdomen

Examination of the abdomen begins with a superficial palpation, with the help of which we determine the tone of muscles of the forward abdominal wall, degree of their resistance to examination, pain regions, presence of diastase of the muscles rectus abdominis and state of the umbilical ring.

The examination is carried out in such position of the patient, "lying on his back", his arms stretched along the trunk, leg straightened,

slightly bent in knee joints (for decrease of a tension of the forward abdominal wall). The doctor (a right-hander) sits on the right side near a bed of the patient on the chair, the sitting of which her places on of the patient's pelvis and the height of his bed.

On superficial palpation the state of doctor's hands is very important: the hands must be warm, and the nails must be cut off.

It is better to carry out the superficial palpation on an empty stomach before eating, after evacuating large intestine. Before the beginning of the palpation in order to decrease the press tension the doctor should put his one (two) palms on the abdominal wall of the patient for a short while, that the patient get used to the doctor's hand. During it simultaneously is checked the skill of the patient to breathe with the participation of the diaphragm: during inspiration the palm of the doctor, lying on the abdomen should rise, during expiration is should go down. Pay attention to equality of the movements of different regions of the abdomen in respiration.

Superficial palpation is carried out by a dextral hand or simultaneously by both hands on symmetric regions of the abdominal wall: we put a palm with closed and straightening fingers on the examined region, the hand should be mild, flexible, the muscles – weakened; smoothly, without penetrating deeply in abdominal cavity, make cautious slipping and stroking movements by dactyls on the skin and muscles of the abdominal wall, by a little pressing on them and to feel the final phalanxes. It is the palm that takes part in palpation. Moving it from one region of the abdomen to another, gradually examine the whole forward abdominal wall. During superficial palpation, it is necessary to look not at the abdomen, but at the face of the patient, in order to see in time his reaction to appearance of a pain in reply to the palpation.

Consistently at first even regions of the abdomen are palpated (ilioinguinal, lateral, subcostal), and then odd regions – epigastria, umbilicus and suprapubic. The pain regions are examined in last turn. The attention is paid on on:

- a) tone of muscles of a prelum abdominale;
- b) presence of pain;
- c) degree of muscular resistance.

The forward abdominal wall on superficial palpation in norm is mild, flexible, painless, abdominal press is well developed. If there is pain we determine:

- a) its spreading;
- b) concomitant reaction of the muscles of the forward abdominal wall to superficial palpation.

With the purpose to identify local pain it is possible to use the test of mild percussion (of the regions of the abdominal wall) by a bent II (III) finger (test – Mendel's sign).

After that the patient is recommended, "to lift slightly this head, to breathe in and strain up". At the same time the tips of the bent fingers of dextral arm put along the forward midline of the forward abdominal wall, palpating a white line of the abdomen from a xiphoid process to pubic. In norm the intense cylinders of the muscles rectus abdominis of the abdominal wall and the umbilical ring do not let the fingertips to pass.

With the purpose of ascertaining hernial diverticulum a superficial palpation of a white line of the abdomen, of the umbilical ring, inguinal regions is carried out. The examination should be carried out in vertical position of the patient with the intense forward abdominal wall.

If in the certain part of the abdomen there is a pain on superficial palpation and in reply to it and immediately during palpation in the certain region transitive local resistance of the muscles occurs, it is a local resistance on the superficial palpation. This reaction disappears or decreases at distraction of the patient by means of long strokings on the abdominal wall. It is connected with pathology of internal organs, which placed in a projection of the pain region, rare – with pathology of the most forward abdominal wall. In local resistance the pain is dull, which the patient can endure for a long time, characterizing it sometimes as "hypersensibility" or "discomfort".

The superficial palpation of the forward abdominal wall frequently permits to determine the cause of asymmetry or circumscribed diverticulum (in substantial enlargement of the liver, liens the superficial palpation permits to grope them already at this stage). In canceromatosis the peritoneum sometimes is so consolidated and thickened that the superficial palpation allows to grope it as a testa under attenuatous flabby muscles of an abdominal wall.

Deep palpation and other auxiliary methods of examination of organs of the abdominal cavity

We examine organs of the abdominal cavity by deep palpation, determining their positions, dimensions, form, consistence, and state of the surface, presence of pain. Besides, we can find additional pathological creations (cysts, tumors). Conditions for realization of deep palpation are similar for those of superficial palpation. In some cases a deep palpation is carried out in a "standing" position of the patient.

For specification of borders of the organs together with deep palpation the doctor can use percussion and auscultation. In patients with ascites palpations should be used (see further).

Before the beginning of deep palpation remind projections of organs of the abdominal cavity on the forward abdominal wall (fig. 30).

It is expedient to adhere to the following sequence of deep palpation of the organs of the abdominal cavity: the colon, stomach, pancreas, liver, gallbladder, and lien. The organ, in projection of which the superficial palpation causes a pain, is examined in the last turn because of an opportunity of appearance of diffuse protection of the muscles of the forward abdominal wall.

Deep palpation of the colon, stomach and the pancreas is carried out after V.P.Obraztsov (deep, sliding, methodical, topographical palpation). The essence of the procedure: during inspiration to penetrate by a hand in the abdominal cavity and, sliding on the back wall of the abdomen to grope the examined organ and, trundling through it by the fingers, to determine its properties.

The dextral palm is put on the forward abdominal wall (FAW) in the region of the examined organ, so that the tips of the bent fingers were on one line parallel to longitudinal axis of the examined intestine or edge of the organ (the thumb doesn't participate in deep palpation). At the same time the patient breathes freely, deeply, through the mouth, using diaphragmal type of respiration. The patient is asked to make an inspiration. At this moment the doctor by his fingertips moves the skin of the abdomen forward (dermal fold is before the fingers). It is reserve of the skin, which will facilitate the further progression movement of the hand. Then, during expiration, at lowering and weakening of the FAW the doctor smoothly dips his fingers deep into the abdomen

through resistance of the muscles, trying to reach the back wall of abdominal cavity. (*Attention!* In some patients it is possible to reach not at once, but during several respiratory movements. Therefore, in such cases during an inspiration keep you hand on the abdomen in the depth, which you have achieved previously. During each following inspiration you must try to penetrate more deeply).

At the end of expiration the doctor slips by his fingertips in the direction, perpendicular to the length of an intestine (edge of the organ) until he touches the creation, which is palpated. (*Attention!* The fingers must move together with the skin under them, instead of slipping on it).

The revealed organ is pressed to the back wall of the abdomen and moving across it, palpate it.

For more complete imagination about the properties of the organ repeat the above-mentioned procedure maximum during 3-5 respiratory cycles.

The colon is examined in the following sequence: a sigmoid, cecum, transverse colon, and other departments, which cannot always be palpated.

Palpating departments of the colon the doctor determines: its diameter, solidity, character of its surface, mobility, presence of peristalsis, murmur, splashing sound, painful, sensations.

The sigmoid colon is placed in the left inguinal region. It has a slanting direction and almost perpendicularly crosses umbilical-spine line on the border of external and middle one third of it.

In norm the sigmoid colon is palpated 15 cm long as sleek, moderately solid tube 1,5-2 cm in diameter. It is not painful, does not murmur, it peristalses can be slowly and occasionally, easily displaced within 5 cm.

At elongation of a mesentery or the colon itself (dolichosigma) it can be palpated more to the left, than usually.

The caecum is in the dextral region; it has also slanting course, crossing under right angle the dextral umbilical-spine line on the border of external and median third of it.

In norm the caecum has the form of the smooth, soft elastic cylinder 3-5 cm in diameter. It is somewhat dilated at the bottom forming a blind pouch at the end; it is painless, mobile, it murmur at pressing.

Sometimes in the dextral inguinal region the terminal department of the ileum may be also palpated, which opens from an interior side into the caecum in the direction from below aslant. If this department of the intestine is in the contracted state and accessible to palpation; then it is determined as smooth, solid, mobile, painless tube 10-15 cm long and no more, than a little finger in diameter. This part of the intestine is periodically relaxed, giving away a loud murmur, at which it the intestine seems to have disappeared under the doctor's hand.

Ascending and descending departments of the colon are placed longitudinal, accordingly in the dextral and left lateral regions of the abdomen. In the abdominal cavity they are placed on a mild basis, which prevents from their palpation. Therefore it is necessary to make a solid basis previously, to which it will be possible to press the colon on its palpation (bimanual palpation). For this purpose you can put the palm of your left hand, under the lumbar regions.

Descending and ascending departments of the colon, if they are managed to be determined, represent themselves as mobile, little bit solid, painless cylinders almost 2 cm in diameter.

The transverse colon is palpated in the umbilical region by both hands simultaneously (bimanual palpation).

In norm the transverse colon has a form of cylinder, with lies transverse, curved arched, little bit solid, near 2,5 cm in diameter. It is painless, easily moved upwards and downwards. In case when you fail to find the transverse colon, it is necessary to repeat palpation after finding of large curvature of the stomach, which is placed 2-3 cm higher than the large intestine.

It is necessary to remember, that in the case of organ's ptosis the transverse colon can be at the pelvis level.

Ascertaining certain pathological changes of the colon is characteristic of some diseases. For example, the local dilating, consolidation and gibbosity of a surface of the circumscribed region of the colon more often determines its tumoral lesion.

In the patients with ascites the presence even of small amount of free fluid in the abdominal cavity essentially prevents from palpation of the colon.

The small intestine usually is not accessible to palpation, as it lies deeply in the abdominal cavity and is extremely mobile, that does

not permit to press it to the back abdominal wall. But in its inflammation (enteritis) sometimes it is possible to find blown with gas (intestinal loops) and to determine a splashing sound.

Besides, in the patients with the thin abdominal wall the deep palpation in the umbilical region enables to find enlarged mesenteric lymph nodes during their inflammation (mesoadenitis) or affection with metastasizes of cancer.

The stomach is palpate after V.P.Obratsov. We feel consistently the large curvature and pyloric portion of the stomach. Other departments of it in norm are not accessible to palpations.

The large curvature of a stomach is placed in the upper part of the umbilical region with the camber turned downward. Only that region of the large curvature, which lies on the column, is accessible to palpation. Procedure of palpation: to put the dextral palm along the abdomen on the front midlines that the finger tips were directed to the side of xiphoid process and were placed 2-4 cm above the umbilicus.



Fig. 31. Palpation of the large curvature of the stomach.

Dermal fold is moved together before the fingers. During expiration the doctor dips his hand deep into the abdomen; reaches the column and slips on it by finger tips in downwards direction (fig. 31). To palpate the large curvature of the stomach is possible in 50 % of all cases.

Normally on palpation there is an impression of rolling from the mild, smooth cylinder, which goes transverse to the column on both sides of it. The mobility of the large curvature is circumscribed; palpation is not painful, murmur is possible.

The pyloric portion of the stomach is possible to palpate less often. It is placed somewhat below the xiphoid process, to the right of midline, it has a slanting direction: from left below – to the right and up. Procedure of palpation: the right palm is put on the dextral musculus rectus abdominis along the dextral costal arch so that the finger tips were placed 3-4 cm above the belly-button, and were directed to the left costal arch and lay in a projection of the pyloric



Fig. 32. Palpation of the pyloric portion of the stomach.

portion of the stomach. Moving the dermal fold before the fingers, the palpation is carried out in the direction from left above – to the right downward (fig. 32).

In norm the pyloric portion of the stomach has the form of smooth, moderate solid, inactive painless tube with no more than a little finger in diameter. Its palpation is accompanied by a periodic relaxation, and sometimes – by original murmur, that reminds, "squeak of a mouse".

These parts of the stomach are palpated similarly in the "standing" position of the patient.

Sometimes palpation of the stomach permits to find out a tumor, which originates from its wall (as spherical or long dense creations, which there is not movable enough, that determines spreading of the tumor on the neighboring organs).

The presence of persistent consolidation of the pyloric portion of the stomach is an attribute of one of the types of cancer of the initial part of the stomach -scirrhous, though there can be another reason – pylorospasm or cicatrical pyloric stenosis. Tumors of the cardiac part of the stomach, as a rule, are not accessible to palpation. The inferior border of the stomach corresponds to the large curvature, which is determined palpatory.

Auscultative method of definition of the inferior border of the stomach. A position of the patient is "lying on his back". A phonendoscope is put by the left hand on the left musculus rectus abdominis immediately below the dextral costal arch. The doctor makes by his fingertip (of index or middle finger) of the right hand mild tapping movements (on the skin of the abdominal wall) in a transversal direction, beginning from the phonendoscope and moving slowly downwards (fig. 33). At this moment we hear a loud sound above the stomach, which weakens or disappears beyond the borders of the stomach.

Normally the inferior border of the stomach is above the belly-button: in men – 3-4 cm, in women – 1-2 cm above. The ptosis of it

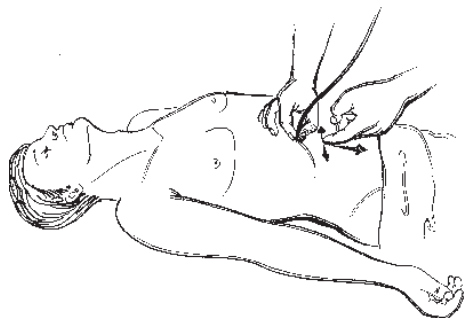


Fig. 33. Definition of the inferior border of the stomach by auscultative method.

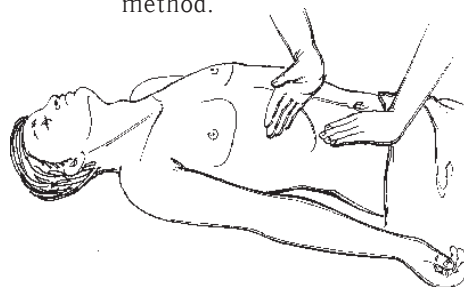


Fig. 34. Revealing of a splashing sound in the stomach by method of succussion.

indicates significant gastrectasia (stenosis or atony of a smooth musculature of the organ) or gastroptosis.

The method of succussion (shaking) permits to determine presence of fluid in the stomach. Procedure: the patient is lying on his back, breathing equally and deeply with participation of the muscles of the forward abdominal wall. The doctor presses an epigastric region by ulnar edge of the left palm immediately below the xiphoid process. The puts his dextral palm along the epigastric area to the left of midline so that the bent fingers were placed near (edge of) the left palm. Then by four fingers of the dextral hand (the thumb doesn't participate), hardly tearing off them from the skin,

the doctor makes shaking of the forward abdominal wall, striking on the left musculus rectus abdominis impacts of average force (fig. 34).

In presence of fluid in the stomach such shaking will cause a splashing sound. If during 7-8 hours the patient did not use nutrition and succussion elicits a splashing sound, it indicates lesion of the evacuation function of the stomach (cicatrical, tumoral stenosis, atony of the stomach), rarely – a hyper function of the stomachal glands.

The pancreas is situated behind the stomach and lies on the back abdominal wall transverse the first lumbar vertebra. The head of the pancreas is situated to the right of the column, and its tail – to the left. The diameter of its body and tail (of pancreas) is not more than 2 cm. Consistently the doctor palpates the region of localization of the head and tail of the pancreas. The head of the pancreas is projected on the

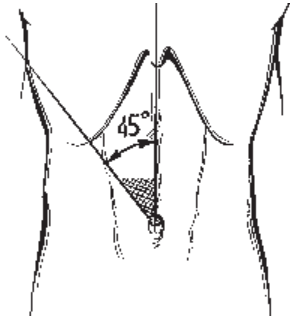


Fig. 35. Shoffar's zone (shaded)

forward abdominal wall in Shoffar's zone (fig. 35), which has the form of a rectangular triangle, which is in the right upper square of the umbilical region (belly-button is fastigium of this triangle, one of cathetus-midline, and hypotenuse is intrinsic third of the line, which connects the belly-button with the dextral costal arch and forms with the midline an angle which has 45°).

Procedure of palpation: the dextral palm is put longitudinally on the abdomen to the right of the midline so that the fingers are directed to the side of the costal arch and cover the zone of Shoffar. At this time the fingertips must be 2-3 cm higher, than the previously found curvature, (inferior border) of the stomach. After that, by moving the fold of the skin before the fingers during expiration the palpation of the head of the pancreas in a direction from above downwards is carried out according to a method of Obrastsov. If it is possible to grope the normal pancreas, there is a sensation of rolling of the fingertips through the transversal, mild, smooth, not pain platen 1,5-2 cm in diameter. The pancreas is immovable, does not murmur, it is different from the neighboring large curvature of the stomach and the transverse colon. If the head of the pancreas is not palpated, then the presence (or absence) of pain in its projection is observed.

Tail of the pancreas is palpates in the following way: the dextral palm is put along external edge of the musculus rectus abdominis, that the finger tips be on the level of the left costal arch. Procedure of palpation is the same, as during examination of the head of pancreas. But for convenience it is necessary to use the method of bimanual palpation (left palm is put from the dextral side under the back of the patient and is laid in a transversal direction under the left lumbar region immediately lower than ribs). During palpation the left arm slightly moves the back abdominal wall in a direction to the dextral arm.

Normally the pancreas is inaccessible to palpation (it is placed deeply, has a mild consistence). It is possible to palpate it in substantial growth and consolidation (in tumoral lesion). When the tumorous

growth or pain is detected in the zone of Shoffar it is necessary to take into account its possible connection with the duodenum and its Vater's papilla or common bile duct.

Pain, connected with the pancreas, is suddenly spread during transition from horizontal to vertical position of the patient.

The liver is situated in the abdominal cavity under a dome (cupola) of the diaphragm in a transversal direction; it occupies the dextral hypochondrium, epigastric region and part of the left hypochondrium. The osteal skeleton of the thorax closes the bigger part of it.

Before palpation it is necessary to determine localization of the inferior edge of the liver previously with the help of percussion or auscultation.

Using percussive method the finger-plethysimeter is put on the dextral part of the abdomen at the level of iliac bone, so that the middle phalanx of the finger lies on the dextral median-clavicular line perpendicularly to its direction. Keeping such position of the finger-plethysimeter and using silent impacts, the percussion is carried out on

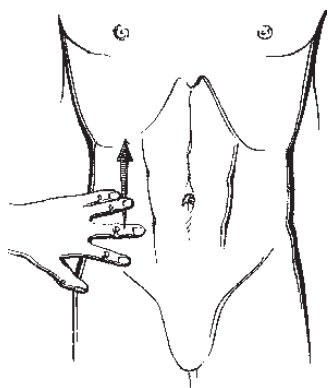


Fig. 36. Initial position of the finger-plethysimeter and direction of its movement during percussive definition of the low bound of the liver on the right median-clavicular line.

the specified line from below upwards in the direction of the dextral costal arch to revealing the border of change of a tympanitis into characteristic of the liver dull sound (fig. 36). This border is also the inferior limit of the liver.

On auscultation the stethoscope is put on the VIII-th rib on the dextral median-clavicular line, and the doctor by the index finger of his free hand makes stroke-like movements on the dextral part of the abdomen on the level of iliac crest. The stethoscope is slowly displaced downwards – to the level, where the noise from the finger touch with the skin suddenly strengthens (fig. 37). The inferior border of the liver is on this level.

In norm the liver does not jut from under the costal arch and is not palpated.

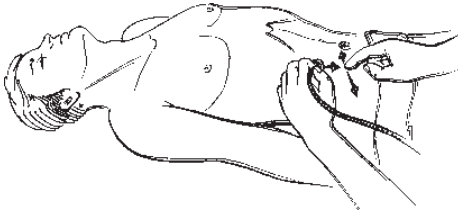


Fig. 37. Definition of the inferior border of the liver by auscultative method.

But in hepatoptosis caused by other causes, during palpation, especially in vertical position of the body, it is possible to palpated its thin, a little pointed or, rounded, even, mild and painless edge, prominent from under the costal arch not more than 1-1,5 cm.

In other cases the edge of the liver, which is accessible to palpation, indicates its enlargement. By diseases of the liver (cirrhosis, cancer, hepatitis) and pathology of exterior biliary ducts, states, which complicate bile outflow etc it can be caused.

An acute, a little wavy, dense, painless edge is characteristic of cirrhosis of the liver. In patients with cancer of the liver its edge becomes thicker, unequal, with tuberous surface, its consistence is firm ("of petrous density"), painless.

The uneven surface of the liver with local protuberance is in focus lesion (Echinococcus, abscess). More substantial growth of the liver (hepatomegalia) is indicative of cirrhosis, cancer, and cardiac insufficiency. Its inferior borders reach the upper flaring portion of the ilium.

If hepatomegalia is the result of cardiac insufficiency, then push-like press on the dextral hypochondrium induces distention of the veins of the neck because of the hepatojugular reflux (positive Plesh's sign).

Percussion of the liver dimensions is carried out according to Kurlov method and is mentioned in the case report by inscription: 10-9-8 cm (norm).

The even enlargement of all three dimensions of the liver is indicative of a diffuse lesion of this organ. As a rule, only the inferior border of the liver can vary (lower), as ligaments in the abdominal cavity fix this organ.

The essential increase of any of these dimensions can indicate presence of local pathological process in the liver (tumor, abscess).

The spreading of the upper border of the hepatic dullness at a normal position of its inferior border is often imaginary and caused by such reasons, as the large pneumonic infiltration in the inferior part of the dextral lung, exudation in the dextral pleural cavity, or subdiaphragmatic abscess.

The decrease of all three dimensions of the liver can be in variant atrophic cirrhosis of the liver.

Simultaneous shift downwards of the upper and inferior borders of the liver can be caused by hepatoptosis, right-hand pneumothorax. The even shift upwards of the inferior the upper borders of the liver can be caused by the causes, which raise the intra-abdominal pressure (ascites, meteorism, pregnancy), rarely by resection of the dextral lung.

The gallbladder is situated on the inferior surface of the liver, has a mild consistence and that is why in norm it is not accessible to palpation. Its projection (Ker's point) on the forward abdominal wall corresponds to the place of crossing of exterior edge of the dextral musculus rectus abdominis with the dextral costal arch (or inferior edge of the liver when it is enlarged).

It is possible to palpate only the considerably enlarged gallbladder during its strain owing to atony of the walls, overflow with the calculi, purulent inflammation (empyema), hydrops and, rarely, in tumoral lesion.

The dimensions of the gallbladder, its form, consistence, mobility, and presence of pain depend on character of pathological process. For example, the enlargement of the gallbladder in atony of its walls, empyema and cholelithiasis is usually moderate and palpation of such bladder, as a rule, is painful (see in part: "Acute abdomen"). Hydrops of the gallbladder is cause by a steady disorder of bile discharge as a result of compression of the terminal and intra-pancreatic departments of common bile duct by a tumor of the head of the pancreas or major duodenal papilla (Vater's papilla). The gallbladder is enlarged, pear-shaped, with the smooth intense walls, painless, mobile during respiration and easily movable (positive Courvoisier-Terrier's symptom).

The spleen is situated in the depth of the left hypochondria region, lateral to the stomach immediate under the left dome of the diaphragm and consequently, as well as the liver, has the respiratory mobility. Its form – is oval. The lien is projected on the left lateral

region of a thorax between the IX and XI rib, and the longitudinal axis of this organ almost corresponds to the course of the X rib.

Procedure of its palpation basically is similar to the palpation of the liver. At first palpation is carried out in a position of the patient "lying on his back". The palm of the dextral hand is placed in left lateral region of the abdomen outside from the edges of the straight abdominal muscle so that the basis of the palm be directed to the pubes, and fingertips of the bent fingers be on one level near the edge of the left costal arch. The fingertip of the middle finger should lie in the corner between the inferior edge of the X rib and free end of the XI rib. The thumb of the left hand does not participate in palpation. The palm of the left hand is put in a transversal direction on the lateral region of the left part of the thorax lengthways to the costal arch, in order to limit during palpation its lateral movements during respiration and to make conditions for increase of respiratory excursions of the left dome of the diaphragm, and accordingly – the



Fig. 38. Bimanual palpation of the lien (position of the patient – "lying on his back").

lien. During palpation the doctor regulates respiration of the patient (fig. 38).

At first the doctor offers to the patient to inhale by means of the abdomen, and at this very moment he removes the skin of the abdominal wall by the fingers of the dextral hand in 3-4 cm in a direction of the palm, that is in the side, which inverse to the costal arch. So, we have a reserve of the skin under the fingers in order to facilitate their further movement deep into the abdominal cavity. After that the patient makes expiration, and the doctor, watching the abdominal wall, which is lowering, slowly dips the fingers of the dextral hand deep into the abdomen and fixes in this position his hand till the end of the following inspiration. Between the costal arch and dorsum surface of the fingers enough space should remain to pass the inferior pole of the lien. After that the patient again is offered to inhale

deeply by "means of the abdomen". Simultaneously the doctor by the left palm presses on left costal arch to limit its mobility, and he keeps the fingers of his dextral hand motionless in depth of the abdomen, making the resistance of pulsing movement of the abdominal wall (fig. 38). The diaphragm during inspiration lowers, its left dome shifts the lien downwards. If the lien is accessible to palpation, on which its inferior pole, lowering, penetrates between the fingers and costal arch into a pouch, formed by finger pressing on the abdominal wall, and then, sliding from it, passes through the fingertips and is felt in such a way. Sometimes the lien does not get into a pouch, and only encounters the fingertips by the inferior pole. In this case in order to grope it, it is necessary during inspiration to move slightly the dextral hand forward, straightening the fingers (which are bent in phalanxes) and making by them stroking movements from above or from below (as on palpation of the liver). Anyway it is necessary to palpate the lien very carefully in order not to damage it.

Besides, palpation can be carried out in a position of the patient on the dextral side (according to Sali-Bacon). The dextral leg of the patient should be straight, and the left one – bent in the knee and little drawn up to the body. Both arms put together, the patient puts them under his dextral cheek. The doctor stands near a bed of the patient on his dextral knee and carries out palpation of the lien, using the same methods, as on palpation of the patient in a position "on the back" (fig. 39).

On revealing the lien the doctor studies degree of its enlargement, consistence, character of the surface, presence of pain.

In norm the lien is not palpated. If it is possible to palpate it that means that it's enlarged.

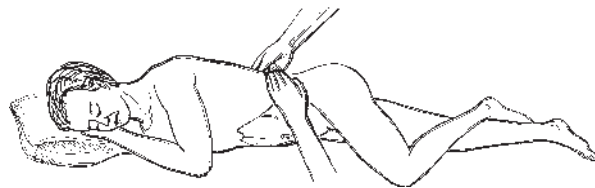


Fig. 39. Palpation of the lien by Sali (position of the patient – "lying on the right side").

In order to distinguish the enlarged lien from the enlarged left kidney it is necessary to carry out additional palpation in a position "standing" (when the lien goes back

and is not palpated, and the kidney moves downwards and consequently becomes more accessible to palpation). Besides in splenomegaly on the forward edge of the lien the characteristic clippings are palpated, while the kidney has specific peculiarities on palpation.

After palpation of the lien its dimensions are defined according to Kurlov's method. For this purpose at first the doctor finds the upper and inferior borders of the lien, and then its forward that back edges. The examination is carried out in a position of the patient lying on the right side, as well as on palpation by Sali's method. The finger-plethysmometer is put parallel to the organ's border, which is being determined. Percussion is made from a clear (tympanic) sound to more dull, using silent impacts. After each pair of impacts the finger-plethysmometer is removed in 0,5-1 cm. The found border is marked on the edge of the finger-plethysmometer, turned to the side of a clear (tympanic) sound. It is necessary to take into consideration, that when the spleen has normal dimensions above it the sound is defined not dull, but little loss of resonance with tympanic shade owing to close accommodation of air "bladder" of the stomach (space Traube) and intestines, which contain gas.

At first the upper and inferior borders of the lien are determined. For this purpose the finger-plethysmometer is put in a transversal direction on the left lateral surface of the thorax on the level of the V rib. The middle phalanx of the finger should lie on the middle axillary line and perpendicularly to it. The percussion is carried out along this line on ribs and intercostals spaces, keeping a transversal position of the fingers-plethysmometer, in the directions of the left upper flaring portion of the ileum till revealing the border of transition of a clear pulmonary sound into a dull one. This border corresponds to the upper border of the lien and in norm is situated on the IX rib (account of ribs is made beginning from the free end of the XII rib). After noticing the found border by dermatograph or fixing it by the little finger of the left hand, the finger-plethysmometer is put immediately above the left upper flaring portion of the ileum and the percussion is carried out on the middle axillary line in an inverse direction (fig. 40 a, b).

The border of transition of a thympanitis into obtusion corresponds to the inferior border of the lien and in norm is on the XI rib. The distance between the upper and inferior borders of the lien is measured.

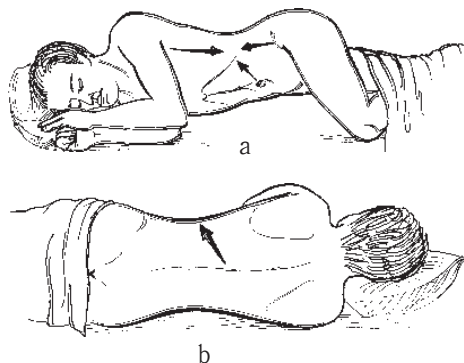


Fig. 40. Scheme of size assessment of the liver by percussion (by Kurlow): a – directions of percussion during determining of width of an obtusion and the forward edge (the forward-lower pole); b – direction of percussion during assessing of the back edge (the back-upper pole).

In norm it is 4-7 cm and is called width of an obtusion.

Determining the forward edge (the forward-lower pole) of the liver the finger-plethysmometer is put longitudinally on the forward midline of the abdomen so that the middle phalanx of the finger can be on the umbilical line and perpendicular to it. The percussion is carried out in direction to the liver on the line, which connects the belly button and the point of crossing of the X left rib on the left with the middle axillary line (fig. 40 a).

The border of transition of a tympanic sound into

obtusion corresponds to the forward edge of the liver. In norm it does not go out of the limits of the forward axillary lines.

For determining of the back edge (the forward-upper pole) of the liver it is necessary at first to grope the X rib and to find its back end near the column. Then the finger-plethysmometer is put along the left columnar line, so that its middle phalanx lie on the X rib and be perpendicular to it. The percussion is carried out on the X rib in a direction to the liver, keeping the same position of the finger-plethysmometer (fig. 40 b). The transition of a tympanic sound into an obtuse one corresponds to the back border of the liver. This place is marked by dermatograph. In norm the back edge of the liver does not go beyond borders of the left scapular line. After measuring the size between the forward and back edges of the liver, the length of an obtusion is to be found, which in norm is 6-8 cm. In substantial enlargement of the liver its forward edge can jut from under the costal arch. In such a case the doctor measures additionally this part of the liver.

The dimensions of the liver by Kurlow are registered in the case history as fraction, for example: 6.19/10, where the integer corresponds

to the dimension of the part of the lien, which has gone beyond the limits of the costal arch, numerator – length of an obtusion, and denominator – width of an obtusion.

It is also possible to use one more simple method of revealing enlargement of the dimensions of the lien. So, if in a position of the patient according to Sali-Bacon (see above) on percussion in the place of crossing of the X rib on the left with an middle axillary line dull sound is determined similar to the hepatic dullness, it indicates to substantial increase of the lien (positive Ragoši's sign). The enlargement of the lien can be in sepsis, cirrhosis of the liver, clottage of the splenic or portal veins, its tumor and cyst, other pathological processes.

In ascites the palpation of the liver and the lien quite often is labored. In this case it is necessary to carry out the palpation of the liver in a position of the patient "lying on the left side" and "standing with a small inclination of his trunk to forward", and the lien is better palpated in a position "lying on the dextral side" – by Sali-Bacon.

In the expressed ascites for revealing hepatomegalia and splenomegalia a method of balloting palpation is used. (The patient lying on his back, the doctor by his fingertips of little bent fingers of the right hand, without losing contact with the skin, makes short sharp (jerky) impacts on the forward abdominal wall perpendicularly to the imaginable inferior edge of the examined organ, trying to encounter it. It is made in the certain part of the abdomen on the level of intermediate surface of the crest of the ileum, slowly displacing fingers in the direction top the costal arch until feeling a solid (hard) body, which goes deep into the abdominal cavity, and then floats and runs into (encounters) the fingertips – sign of "floating little ice floe". At this moment the surface of the organ can be examined).

Additional pathological formations

During deep palpation of the organs of the abdominal cavity the additional pathological formations may be found (tumor, cyst etc.). In such cases it is necessary to determine the place of localization of this formation in the abdominal cavity, its form, dimensions, consistence, presence of fluctuation, character of the surface, mobility, connection with neighboring organs, painful. The formation, which is immediately connected with the forward abdominal wall, usually is noticeable already

in examination, and it is palpated both during relaxation, and strain of the muscles of the prelum abdominale, and during respiratory excursion of the abdomen it is displaced in a forward-back direction together with the abdominal wall.

The intra-abdominal formation is visually determined, if it has large sizes, during strong-willed strain of the muscles of the prelum abdominale its palpation is inconvenient, and at relaxation the mobility of such formation and its shift in the up-down direction can be determined during respiration. But it is necessary to take into account, that the mobility of such formation depends on natural mobility of the organ, from which it originates, and if it is a tumor – that from its spreading on the other organs.

Retroperitoneal formation differs by its deep placement in the abdominal cavity and close connection with its back wall and little mobility. It is, as a rule, is covered with the organs of the abdominal cavity (the stomach or intestine, etc.

Examination of the abdomen in ascites by a method of percussion.

Percussion together with the above mentioned spheres of use for research of the organs of the abdominal cavity permits to determine the cause of total magnification of the abdomen and, in particular, definition of attributes of an ascites.

Above the place of concentration of free fluid in the abdominal cavity the dull sound is defined and zone of obtusion during change of position of the body is quickly displaced. Therefore for determining ascites the percussion of the abdomen is carried out in different positions of the patient: lying on the back and on the side, standing, and also in genucubital position. The doctor percusses from the field of a tympanic sound, placing the finger-plethysmometer parallel to the imaginable level of fluid, using silent finger impacts (blows).

On percussion of the abdomen in the position "lying on his back", the finger-plethysmometer is put longitudinal on the forward midlines so that the middle phalanx of it can be on the belly button. The percussion is carried out on the umbilical line in turn in the direction of dextral and left lateral parts of the abdomen to transition of a tympanitis into dull sound (fig. 41 a). In norm the border of transition of the tympanic sound into a dull one passes on the forward axillary lines

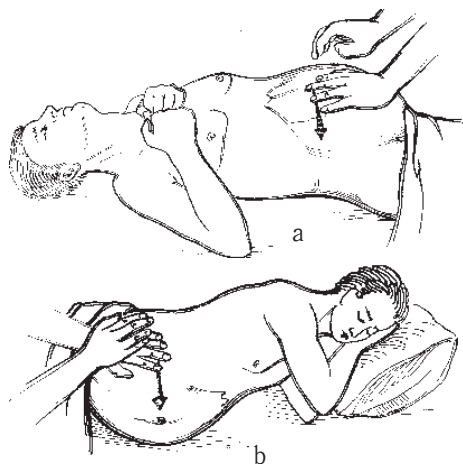


Fig. 41. Determining of ascites by percussion in the position of the patient: a - "lying on his back"; b - "lying on the side".

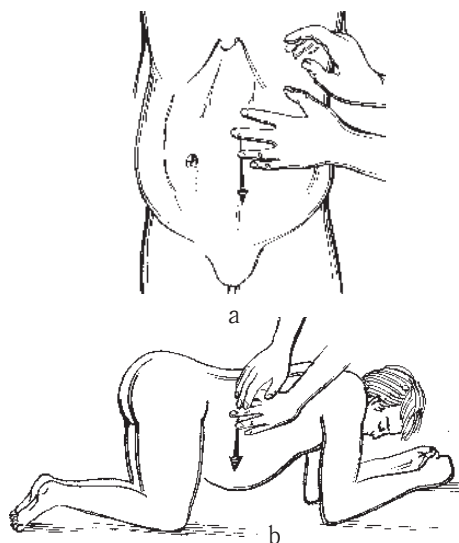


Fig 42. Determining of ascites by percussion in the patient's position: a - vertical; b - genucubital.

on both sides. More medial placement of such line indicates accumulation of free fluid in the abdominal cavity. In this case on analogous percussion in the position of the patient, both on right, and on the left side (fig.41, b), the border of an obtusion above the fluid in under-laying flanges will correspond its normal position.

On transition of the patient in a vertical position fluid are shifts in the lower part of the abdominal cavity. Therefore in the lateral parts of the abdomen there will be a tympanitis, and the percussion on the vertical lines in a direction from the top downwards in the inferior part of the abdomen will determine a region of a dull sound with a high horizontal border (fig. 42, a).

In a genucubital position the region of a dull sound will be transferred into the umbilical region, and in other parts there will be a tympanitis. In this case the percussion is made in a direction to the belly-button, beginning from the right and left lateral flanks of the abdomen, xiphoid process and the pubis (Fig.42, b). In this position it is possible to find even a small amount of fluid in the abdominal cavity.

The method of undulation can be used in doubtful cases in order to detect loose fluid in the abdominal cavity. For this purpose the doctor's palm is placed on the one side of the abdomen, on the other side the makes by his bent fingers of the other hand a little (snatch) jerk of abdominal wall, which at presence of fluid is legibly determined by the "hearing" palm. In order to exclude transfer of the jerk along the and, making incorrect resolution in connection with it, the assistant is asked to put his hand vertically on the centerline of the abdomen. If after that the jerk is transferred, presence of loose fluid in the abdominal cavity is proved.

Except for ascites, the augmentation of the abdomen may be caused by meteorism in which above all parts of the abdomen the percussion will cause a tympanic sound.

Auscultation

In norm auscultation of the abdomen reveals periodically occurring sounds of peristalsis of intestinum like murmur and pouring of fluid. In patients with the phenomena of perivisceritis above the corresponding regions a friction sound of the peritoneum can be heard. In atherosclerotic affect of the aorta and stenosis of the mesenterial arteries auscultatively you'll hear systolic sound in epigastric and umbilical regions.

Measuring of the abdomen

Determining the outline of the abdomen should be done when there is free or sacculated fluid in the abdominal cavity. This is done, particularly in those cases, when you need to watch the changes of the abdominal volume (after punctions and operations on ascites). Measuring strip is placed on the level of the umbilicus.

Examination of the kidneys and the urinary bladder

The kidneys are situated in retroperitoneal space and adjoin to the back abdominal wall on both sides from the column on the level of XI-XII thoracic and I-II lumbar vertebrae, the XII rib passes approximately on the middle of the kidney. Both of the kidneys have moderate respiratory mobility.

Anamnesis

Collecting complaints and an anamnesis the doctor may receive information about state of the kidneys. First of all he should determine localization and irradiation of painful sensations.

Renal pains (colica renalis, pyelitis, etc.) are localized in the lumbar region, radiating on the course of ureters downwards to the urinary bladder, to the inguinal regions, the urethral canal, to the generative organs, to the perineum, and to the hips.

According to its character the pain can be acute (cutting, stinging, travail-like) and dull (aching, pressing, drawing). According to its intensity it is strong, slight. Its onset can be sudden, acute, and gradual. The causes of its appearance or intensifying frequently can be physical strain, long walk, run, jumps, jolty driving, spicy, salty food, the use of alcohol, overcooling. Whether the pain disappears or reduces its intensity in calm, from the compelled position of the body, from application of hot-water bottle, from anesthetizing medicines and spasmolytics. Sometimes the pain disappears after sudden excretion of a plenty of urine.

In case of contractions-like pain (attack of renal colic) it is necessary to specify if rigor, nausea, vomiting, elevation of body temperature, and often impulses to urination, and the dysuric phenomena accompanied it. From time to time after such attacks patients can notice removed calculi with urine.

Except for a pain, sometimes such patients have unpleasant sensations (heaviness, pressing) in the region of loin, edemas of the eyelids, a headache, and weakening of vision.

It is still important to find out state of urination function. Dysuria is the disorder of this function. It can be exhibited by a retention, or frequent urination.

In order to give the patient orientation in this question, it is necessary to ask, how many times this patient makes urination at night, as the healthy person does not urinate at night.

Examination

Examining the lumbar region it is possible to reveal skin edema and reddening, which may be attributes of paranephritis. Local growth of hair on loin usually specifies presence of congenital nonclosure of vertebral arches (spina bifida occulta) of lumbar or sacral vertebra (spina bifida), which is frequently accompanied with anomalies of the kidneys. Besides during pain in the kidneys the patient bends his trunk to the side of lesion, while in acute radiculitis – in the opposite direction.

Palpation of the kidneys

Palpation of the kidneys is carried out in a position of the patient on his back, after intestine evacuation, by the method of deep bimanual palpation (similarly to the palpation of the lien).

As a rule, in norm, the kidneys are not palpated. They become accessible to palpation mainly in nephroptosis, the pathological mobility (a wandering ren) or during enlargement of the dimension of the organ not less than in 1,5-2 times. Nevertheless in asthenics sometimes it is possible to grope the inferior pole of the right kidney, which in norm is placed below the left kidney. Nephroptosis and "wandering ren" can be one and bilateral. It is better to palpate the kidneys in this case in the position of the patient "standing with his trunk little bit leaned forward". The doctor palpates, sitting before the patient on a chair (fig. 43). Procedure of a palpation is the same.



Fig. 43. Bimanual palpation of the right kidney in vertical position of the patient.

In movable kidney it is necessary to determine its degree of displacement. There are three possible gradations.

1. Ren palpabilis – when only the inferior pole of the kidney is palpated, and its displacement is possible only in down direction.
2. Ren mobilis – when on palpation it is possible to reach the backside of the upper pole, and displacement is possible in upward, downward and side directions).
3. Ren migrans – the wandering kidney, which is freely displaced on palpation on a significant distance.

On palpation in two last cases (2,3 degree) it is necessary to add Glenard method.

The doctor puts his left arm (fig. 44) round the right flank so that the thumb can be placed under the costal arch, and other fingers – on the lumbar region. After that, when during inspiration the doctor by his right hand manages to go for the upper pole of the kidney, the thumb presses the forward abdominal wall, preventing the seized kidney to move back.



Fig. 44. Glenard method.

If the kidneys are not changed, their forms are spherical, bean-like, with a smooth surface, solid-elastic consistence, not painful.

The enlargement of the dimensions of one of the kidneys may identify its tumor or

hydrups (hydronephrosis). The hilly surface of the kidney, the raised solidity indicates its cancer lesion (hypernephroma), and a smooth surface and soft consistence with fluctuation – indicate hydronephrosis.

Simultaneous enlargement of both of the kidneys is typical of cyst degeneration (polycystic kidney), in which the surface of the organ is uneven, the consistence – is soft elastic.

In contrast to splenomegaly, the enlarged kidney is situated more medial and deep, it has bean-like form, with a cutting in the middle of the intrinsic edge, it is easily displaced upward, and ballots on palpation. Besides above it by percussion – is tympanitis (lies retroperitoneal and is coated with an intestine). It's easier to palpate it in a vertical position of the patient.

Balloting palpation of the kidneys is used in obesity, meteorism and ascites (if it is hard to put an arm deep into the abdominal cavity. The examination is made in the position of the patient on his back. The doctor makes by his fingers of the right hand quick thrusts on the forward abdominal wall in a downward direction, the left arm makes quick thrusts in loins in direction of the right hand, (sometimes), the enlarged or lowered kidney sometimes may approach the front abdominal wall and be palpated.

Penetrative palpation of the kidneys allows find pain in a projection of the kidneys and ureters. Pain points (fig. 45, a) in front are palpated in a position "lying on the back" – the doctor gradually penetrates his index (or middle finger) deep and vertically in symmetric points. First of all the renal points (immediately under the costal arches near the forward end of the X rib) are examined, and then the upper and the lower ureteric points (in the place of intersections of exterior edges of the straight abdominal muscles corresponding to umbilicus and pectineal lines). Back renal points are palpated in the other position – "sitting".

Pressing intensively in turn by a finger on symmetric points in the place of intersection of the inferior edge of the XII rib and exterior edge of the long muscles of the back (fig. 45, b).

In norm there is no pain in the specified points. Its presence is indicative of pathology of the kidneys, of the ureters, is more often of inflammatory origin.

Percussion (on loins) is made on the purpose to determine a pain in a projection of the kidneys (fig. 46). A position of the patient is "standing" (sitting). The left palm of the doctor lies along the loin in the region of the XII rib. On its rear surface by the ulnar edge of right hand the doctor makes not strong impacts. Pain in this region indicates urolithiasis, or pyelonephritis or paranephritis (Pasternatsky's symptom is positive). However this attribute is not specific and may be positive in myositis of the loins muscles or radiculitis.

The urinary bladder in norm is not palpated (situated in the pelvic cavity) and becomes accessible to examination only owing to retention of the urine. In such cases when the patient is lying on his back, in the supra-pubic region visually there is distension of the forward abdominal wall, which on palpation is elastic, fluctuate, it is of a spherical form, on percussion above it an obtusion is determined.

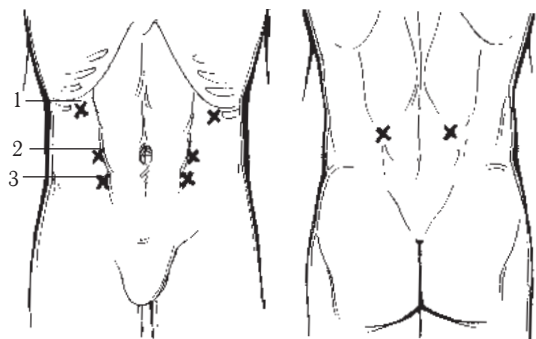


Fig. 45. The points of penetrative palpation of the kidneys and ureters: a – forward renal (1) and uretreal (2 – upper, 3 – lower); b – back renal.

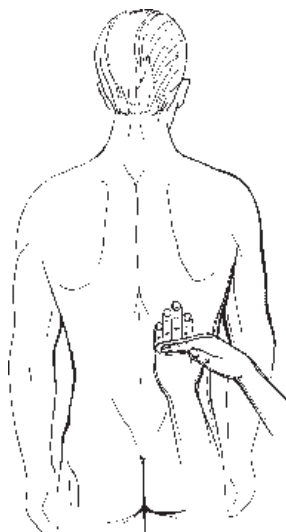


Fig. 46. Method of determining of Pasternatsky's symptom.

Procedure of palpation (analogous to palpation of the colon): the palm is put longwise in the suprapubic region on the distention, directing fingers to the navel; dermal fold is displaced before the fingers and during expiration palpation is made (fig. 47).

On percussion the finger-plessimeter is put transversely on the level of the umbilicus so that the medium phalanx be on the center-

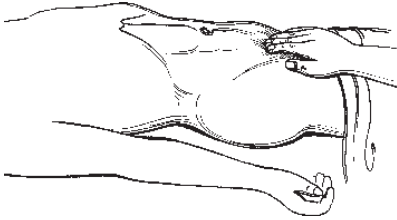


Fig. 47. Palpation of the urinary bladder.

line and perpendicular to it. By slight percutive impacts percuss on this line downwards to the pubes. On border of the over distended urinary bladder the tympanic note passes into obtusion. The change of the patient's position does not vary the upper border of obtusion.

In women in order to distinguish the enlarged bladder from the enlarged uterus (pregnant or affected by tumor), it is necessary to discharge the urine and repeatedly to carry out palpation, percussion.

METHODS OF EXAMINATION OF THE PERINEUM AND RECTUM

Topographical-anatomical data

The perineum occludes the outlet from the pelvic cavity, being its inferior wall. The perineum region has rhomboidal form. The inferior edge of the symphysis is palpated in front, behind – an apex of the coccygeal bone, on each side – performances of the ischial bones are palpated. The perineum is separated from the medial departments of the femur by the perinea-femoralis fold. The perineum is contoured – behind by space between the back commissurae and the anal orifice. Both the male, and the female perinea are divided by the line connecting performances of the ischial bones, into two unequal triangles: forward – genitourinary and back – anal. In the first triangle the genitourinary diaphragm of the pelvis is situated, through which in women the vagina and the urethra pass, in men – there is only the urethra. In anal triangle the diaphragm of the pelvis is situated and the rectum passes.

The external male and female genital organs also belong to the perineum. The skin covering in the perineum region at the center is thin and becomes thicker in directions to its lateral parts.

In men between the root of the scrotum and the anus there is raphe perinei.

Around the anus there are radial folds of the skin (at the expense of joint of muscular fibers of the exterior sphincter of the anus with the skin). The skin has a plenty of sebaceous and sudoriferous glands and is covered by hair. The hypodermic bases, superficial fascia of the perineum are more manifested in the back department of it.

In the perineum region furuncles, carbuncles, hypodermic phlegmons, abscesses, rubbings, intertrigos of the external genital organs, proctitis, suppuration of hemorrhoid, of dermoid cysts, decomposition of tumor of the skin and of the mucous of the anus, infected hematomas, and incarcerated hernias may occur.

Examination of the region of the anus is carried out in the position of the patient on his side with the limbs bent in hip joints, in the genucubital position, in the patient's position lying on his back with the femurs, flexed to the abdomen or in the squatting position.

Examination

The region of the anus conditionally is divided into the following sectors: forward right and forward left. The skin is examined around the anus; it enables to find out swellings of different size and form on the border of the skin and mucous (external hemorrhoids), fistulas, character of excretions from them, edema and reddening, and other formations. On the patient's exertion it is possible to see cyanotic internal hemorrhoids, and by simultaneous abduction of the skin folds of the anus can be found fissures of the anal mucous. Prolapse of the rectum is determined in the same way. The acute anal fissure looks like a painful, hemorrhagic rupture of the mucous membrane, which has no acute reaction of the neighboring tissues. The chronic anal fissure forms defect of the mucous membrane, in the depth of the anus it is possible to see the muscular fibers of the internal constrictor (fig. 48). The margin of the anal fissure is cylinder-like undermined. It is typical of anal fissure a characteristic pain during defecation and admixture fresh blood in feces.

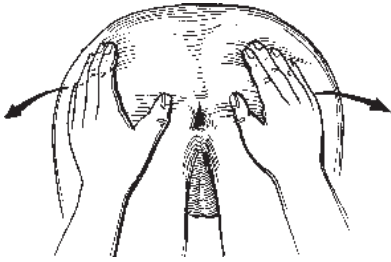


Fig. 48. Anal fissure. Typical localization. Diagnostics by means of examination at sufficient abduction of breeches.

The anal fissure is situated accordingly to 12 hour on a dial on the coccygeal suture (in the genucubital position of the patient). In women the anal fissure is revealed on the forward wall of the anus. There are seldom two fissures at once – on the forward and back walls of the anus.

Palpation of the region of the anus

In the presence of tumescence it is necessary to determine its consistence and sensitivity to a pain.

Uncomplicated hemorrhoids – are of a mild elastic consistence, painless, and complicated by clottages and inflammation – ones are solid and painful. On palpation of the inflammatory infiltrate (paraproctitis) it is necessary to determine its borders and consistence, and also to establish, whether there is no ramollissement in the center.

For determining on the skin point-like of fistula foramens of the rectum and fissures of the mucous membrane of the anus the doctor by two thumbs parts the skin folds. In prolapse of the rectum it is necessary to determine, on the account of what departments it has happened: anal, rectal, whether of this and that segment. For determining the following method is used: the space between the prolapsed region and the skin is palpated by index finger. If the immediate transition of the skin to the mucous membrane is determined, then depending on the size of the prolapsed region there is prolapsus ani or prolapsus ani et recti. If the finger penetrates into more than 3 cm deep from the surface, then there is prolapsus recti.

Rectal examination

The palpation is carried out in the patient's position lying on his back with the abducted in hip joints legs by index finger of the hand in a rubber glove. The finger is greased with Vaselinum and carefully introduced into the anus. In the presence of fissures and hemorrhoids the palpation should be careful because of the pain.

First of all the anal part of the rectum is examined. The attention is paid on that, whether the sphincter is weakened, or binds the finger tight, whether there are mild or consolidated hemorrhoids and in what region they are more painful. In the presence of fistulas it is necessary to find out, whether they are connected with the rectum, for this reason the probe is put into it and the doctor controls by his finger the appearance of it in emptiness of the rectum.

Afterwards the finger is moved forward in the ampullar department, where in norm on its forward surface a solid body of the prostate is palpated, in the middle part of which is a sulcus. The doctor examines size of the prostate, character of its surface, consistency and presence of a spine, painfulness. Normal prostate is 2-2,5 cm long and 3 cm wide. Its two lateral lobes are divided by a sulcus, which disappears in hyperplasia or inflammation.

Cancer of the prostate occurs more often in men of old age. In neglected cases in destruction of the back wall of the capsule and growth of a tumor into a wall of the rectum it is not difficult to make a diagnosis on the basis of determining of solid, tuberous, and in decay – crater-like tumors. On digital palpation of the rectum sometimes it is possible to – palpate through the forward wall of the rectum corresponding to Douglas' space a tuberous tumor – an implantation metastasis into the peritoneum from the tumor of the stomach (Shnicler's metastasis).

In purulent processes of the abdominal cavity the rectal examination helps to determine the presence of abscess in Douglas' space (morbid impending, diverticulum of the forward wall of the rectum and its softening).

In the presence of obstruction as strangulative (volvulus of the sigmoid intestine, invagination), and occlusive genesis (constrictive cancer of the sigmoid or the descending colon) the digital examination reveals weakening of a sphincter and sharp dilatation of an empty ampulla (Obuchov hospital's symptom).

Bimanual inspection of the rectum is carried out on suspicion of calculi or tumor of the urinary bladder, introducing the index finger of the right arm to the upper edge of the prostate, the doctor by the left arm simultaneously presses of the abdominal wall immediately

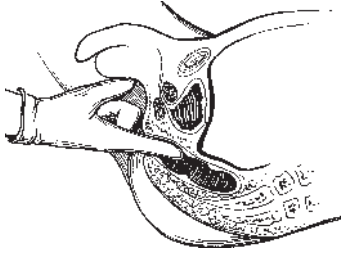


Fig. 49. Digital examination of the rectum.



Fig. 50. Prolapsed hemorrhoids (II and III degree). Radial disposition of sulci.

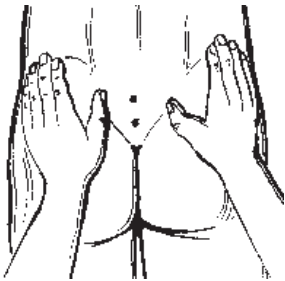


Fig. 51. Dermoid of the sacrum. A typical location on the sacrum in intergluteal fold. It is not connected with the rectum and the anus.

above the pubes. After pulling the finger out of the rectum the doctor inspects attentively character of the excretions, which remained on his glove (fig. 49).

In any bleeding from the anus first of all it is necessary to think of cancer of the rectum. On rectal examination it is possible to detect tumor situated up to 7-8 cm higher from the anus. Epithelial, glandular or villous polyps can fall out through the anus and be seen. The smooth surface indicates polyp, and the tuberous one – cancer (fig. 50).

The careful view of the perineum permits to find epithelial coccygeal passages. This is a congenital disease, which is characterized by the presence of a blind narrow passage or a small cyst in hypodermic the cellular tissue of the sacrococcygeal region. The external foramen of the coccygeal passage is situated strictly along intergluteal fold on the level of the sacrococcygeal joint. The disease is characterized by suppuration and abscess formation of the cellular tissue of the sacrococcygeal region. There remain purulent fistulas or infiltrates in this region in patients between the attacks (fig. 51).

Male genital organs

During general examination the attention is paid to the development of sexual attributes, presence of the developmental defects, one of which is hypospadias, which is characterized by the unfinished formation of the urethral canal:

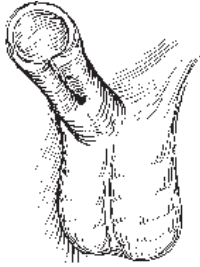


Fig. 52. Hypospadias. The unfinished formation of the urethra, the lower distal urethral wall in the form of a rolled up sleeve.

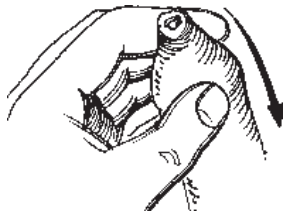


Fig. 53. Phimosis. The prepuce cannot be retracted back over the head of the penis

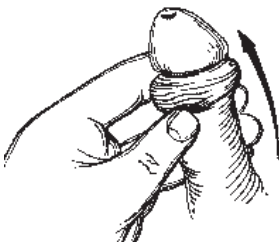


Fig. 54. Paraphimosis. In a sulcus is the sclerosing ring created, which does not permit to set the head of the penis. Swelling and venous congestion of the head of penis.

lower distal urethral wall looks like of a rolled up sleeve, and the orifice in to the urethra is on the inferior surface of the penis, sometimes near a root of the scrotum (the penis is curved) (fig. 52). Epispadias is more rarely observed: the urethral opening is on the dorsum of the penis.

After the general view the inspection of the foreskin of the penis (prepuce) is made. If the prepuce cannot be retracted back over the glans penis then the phimosis (fig. 53) is observed. If the foreskin does not return to its place (is set) and compresses by its ring the balanus of the penis, such pathology is named paraphimosis. The head of the penis becomes cyanotic and swollen because of the venous congestion (fig. 54).

Acuminate condylomas are considered to be nonmalignant formations of the penis as well as red-millet grains, which expand into the large formations, become tuberous, and excrete infrequent, purulent contents with an unpleasant scent.

As for malignant formations the cancer of the penis mainly of the papillary form should be mentioned. In this form a tumor is covered by villous formations, which remind a color cabbage, on the surface of which there are ulcers with sanguineopurulent excretions.

Scrotum

On examination of the scrotum it is necessary to establish the presence of the testicles in it, to compare their size and sensitivity. If a testicle is absent in the

scrotum, a superficial palpation is carried out in the region of the inguinal canal with the purpose of revealing a testicle, which has not descended into the scrotum. Edema of the scrotum is the first attribute of inflammation of a testicle and has a spreading character. It occurs in inflammations of a testicle, of its epididymides and the perineum and indicates involving of the testicle's membranes in the process.

If during examination the skin of the scrotum is tight, without its usual plication, the testicle is not separately palpated, looks like around formation of an elastic consistence, which cannot be set in the abdominal cavity and on percussion gives a dull sound. The transilluminating of it indicates the pink color, which gives reasons for the diagnosis of hydrocele (dropsy of the testicular membranes).

Edema, which develops in membranes of the spermatic cord, is called "funiculocele" and is accompanied by a pain and tumescence in the inguinal region (fig. 55).

The inflammation of a testicle (orchitis) develops due to trauma or as complication of an infective disease (epidemic parotiditis, influenza, typhoid). The disease begins acutely. The testicle is increased in size. The membranes of the scrotum are involved in the process, the skin is adhered to the neighboring tissues, the strain increases and as a result the abscess opens outside (fig. 56).

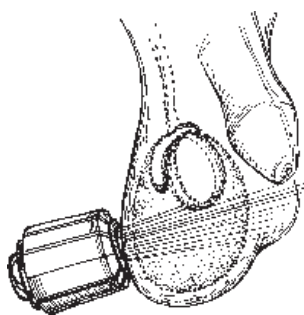


Fig. 55. A hydrocele. Hard-elastic tumor of scrotum, epididymis and testicle not mark off in it. Diaphanoscopy is positive.

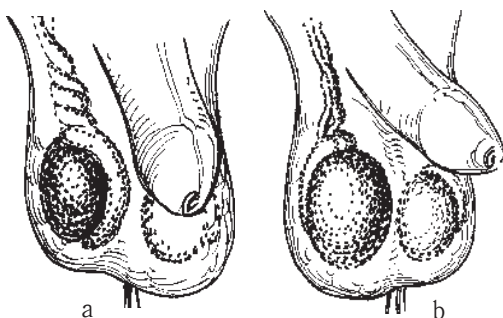


Fig. 56. Torsion of a testis. Painful tumescence of the scrotum: a – sometimes raised and transversal position of the testicle to the pubis increases pain. The epididymis isn't controlled; b – orchitis. Painful increase of the testicle, in most cases in infectious diseases.

Inflammation of the epididymis is one of the most often inflammatory diseases of the male genital organs in persons of 20-25 years of age. A severe pain in the scrotum, sharp edema and its reddening, high temperature of a body accompanies it. On palpation the doctor determines enlargement and consolidation of the epididymis of a testicle, which is so enlarged that covers it not only behind and from above, but passes to the forward surface. That is why it is impossible to find a border of a testicle by palpation.

Sometimes a sharp thickening of the spermatic cord with manifested painfulness is determined on palpation, which can be indicative of its inflammation (funiculitis).



Fig. 57. A varicose dilation of the spermatic cord veins (varicocele). Significant sinuous and dilated veins on the scrotum. The left half of the scrotum is located lower.

Inflammation of the head of the penis – balanitis – occurs usually simultaneously with inflammation of the intrinsic layer of the prepuce – posthitis. The combination of these diseases is called balanoposthitis. On the inspection there is a significant reddening and edema of the foreskin, which are accompanied with pruritus, purulent discharges from the pouch, sometimes – ulceration.

The varicose dilation of the spermatic cord veins (varicocele) occurs mainly in children and young people at the age of 18-30 years old. During the examination in the region of the two upper thirds of the scrotum are winding bands can be seen, which remind a "bag of worms" (fig. 57).

Examination of the female genital organs

Vaginal examination is carried out in rubber gloves after emptying of the urinary bladder. Position the patient is on her back with hips and knees flexed and the thighs abducted. After abduction of the vaginal orifice and inspection of the external genitalia introduces into the vagina the doctor puts his index finger of the right hand directed to the pubic bond, trying tenderly – to push the excretions out in order to take a swab for researching of the character of the bacteriological flora.

After that a middle finger is also put into the vagina and, moving both fingers forward, the vaginal part of the cervix uteri is achieved. The doctor determines its size, form, surface, consistence, passive mobility, painfulness during a shift of the uterus and state of the uteri orifice.

Promptov's symptom (of painfulness) in the uterine displacement aside, forward or backward occurs during inflammation of the peritoneum of the small pelvis or perimetric bases and is important for differential diagnostics of surgical diseases of the abdominal cavity from diseases of the female genital organs. A study of the state of the forward, back, dextral, left vaults of the vagina is rather important. In the presence of tumors, inflammatory infiltrates, encysted hematomas there appear diverticula's of the vault, often with softening in the center.

METHODS OF EXAMINATION OF VASCULAR SYSTEM

Topographical-anatomic data

To branches of the ascending aorta, which arises from the left ventricle of the heart, appertain the brachiocephalic trunk, which continues as the dextral subclavian artery; the left subclavian artery goes independently from the aortic arch. Further the subclavian artery at the left and on the right side passes into the axillary artery, the continuation of which is the brachial artery. From the latter the deep brachial artery passes. Its continuation in distal direction of the brachial artery is the radial one, which together with the ulnar artery after the elbow bend on the level of the neck of the radial bone and both give branches for blood supply of the hand.

The common iliac artery belongs to the branches of the descending aorta. It is divided into internal and external. The internal artery gives branches to organs of the pelvis, the external one begins at level of the sacroiliac junction, passes downwards to the inguinal ligament and on the femur passes into the femoral artery. The femoral artery on the back surface 4-5 cm below the inguinal ligament gives origin to the deep artery of the thigh. In a popliteal fosse the femoral artery passes into the popliteal artery and at once is divided into the anterior and posterior tibial arteries. From the posterior tibial artery passes the branch of the fibular artery. The main artery of the pes is the dorsal artery of the foot, which is continuation of the anterior tibial

artery. The dorsal artery of the foot passes between the tendons of extensor of the large toe and belly of short extensor of the toes.

The outflow of venous blood from the upper limbs begins from the fine veins of the hand, which join the superficial and deep veins of the forearm. The deep veins follow arteries of the same names, as a rule, there are two of them. Superficial or hypodermic veins are both the lateral and medial veins of the arm and mediate vein of the elbow. The brachial veins empty into the axillary vein, which passes into the subclavian one, and the latter runs into the brachiocephalic vein. The continuation is vena cava superior, which empties into the right atrium of the heart. It is necessary to remember, that in veins of the upper limbs there are no valves.

Blood outflow from the lower extremities begins with the veins of the same names of the foot; on the crus they form deep and superficial veins of the inferior limb. The system of the great saphenous vein is spread on the back-internal surface of the anticnemion and on the intrinsic surface of the femur; the system of the small saphenous vein – spreads on the back surface of the anticnemion to the popliteal fosse. The deep veins follow arteries of the same names.

The anatomical basis of originating of varicose disease on the lower extremities is presence of the superficial and deep of venous systems. The border between these two systems is the fascia, which covers the muscles. The superficial veins lie above fascia, the deep veins – under it. The perforated veins join these two systems.

In each vein of the inferior limbs there are valves, which consist of duplication of intima and provide blood flow only in one central direction, both in the superficial, and in deep veins, and in the perforated veins blood runs from the surface into the depth.

For maintenance of normal circulation in veins of the lower extremities three factors are necessary:

1. Work of the left half of the heart;
2. Contraction of the muscles of the anticnemion, which move blood of the deep veins;
3. High-grade function of valves, which assist flow of blood in one direction.

For the superficial veins as well as fascias "the muscular pompe", does not play any role.

The deep and superficial veins under the inguinal ligament run into the external iliac vein, which passes into the common iliac vein. The continuation of it is vena cava inferior, which empties into the right atrium of the heart.

Peculiarities of anamnesis

On collecting anamnesis in the patients with diseases of the vascular system it is necessary to ascertain:

- beginning of exhibiting of the first attributes of a disease;
- development of painful sensations (gradual, sudden: a very strong sudden pain, paleness of the affected extremity, the cold skin of the legs, paresthesia with anemia; empty veins – are characteristic of acute thrombosis of the arteries;
- whether there is fatiguability during walking, sensation of numbness, sensation "of a dead toe", pain at rest, intermitten claudication phenomena (after how many steps during walking the patient is compelled to stop because of pain in the muscles of the lower extremities). They are pathognomic signs of obliterating atherosclerosis of the inferior limbs vessels.

The following influences on intensity of a pain are determined:

- the position of the limb (is lowered, horizontal, lifted – the latter with a pain at rest is characteristic of obliterating atherosclerosis of the inferior limbs vessels; transitive ischemic disorder of the brain and pain in the upper limb at raising it upwards – characteristic of subclavian steal syndrome; disorder of function of the upper extremity and pain at moving it downwards occur in thrombosis of the axillary or subclavian veins);
- temperature of the air (whether the limbs feel cold in winter; paleness of the fingers of a hand under action of a cold and attack-like vasomotor pain, are characteristic of Raynaud's disease);
- physical work.

Whether there is a pain at night in the gastrocnemius muscles, disturbance of sleep, appetite, nutrition, connection of a pain with pregnancy.

It is observed:

- edema of the extremities, which is enlarged in the afternoon, itch, dermahemia, pain and contour veins – indicate post-thrombophlebitic syndrome of the lower extremities;

- paresis, paralysis, dyspnea, palpitation, pain in the region of the heart, like in embolic complications in most cases diseases of the heart form the basis (parietal thrombus occurs after myocardial infarction, atrial flutter and, less often, tumor of the mediastinum). In open foramen ovale in the auricles the crossed embolism can occur, when the presence of thrombi in the venous system can cause arterial embolism. The progressing diseases of the vessels form the basis of chronic occlusion of the arteries. That is why the time of appearance of pain has essential value for diagnostics.

The patient is questioned in detail about the presence of trauma: its character is ascertained (contusion, knife injury, gunshot injury).

What treatment was carried out before admission to a hospital, the past operations (lumbar sympathectomy, bilateral, crossing of the cutaneous nerves, resection of the artery, vein, amputation; bandage, injection of sclerosing solutions into the varicose dilated veins); whether the patient took sanatorium treatments (how many times and where).

The past infectious diseases of the heart, thrombophlebitis of the deep veins, venereal illnesses, and metabolic diseases must be determined.

The influence of factors of risk has to be ascertained: hypertension, diabetes mellitus, smoking, obesity, hyperlipemia, which are the causes of chronic ischemic syndrome; whether the patient used narcotics, their amount; whether he took alcohol.

The doctor specifies, whether the work of the patient is connected with hypothermia cooling, and frostbiting of his legs.

Whether bleedings, thrombophlebitis, eczema, and ulcers complicated the varicose disease of the inferior limbs.

Examination

The examination is carried out in a warm room. On general examination of the peripheric vessels the special attention must be paid to inspection of the superficial venous system, beginning from the venous capillaries on the face and on the nose, which extend in alcoholism, polycythemia, apoplectic condition.

It is necessary to notice:

- that phlebectasia can occur because of development of the collateral circulation in the region of the neck, the thorax and

upper extremities at compression of the vena cava superior (tumor of mediastinum) and in the field of the abdominal wall – at compression of the portal vein and vena cava inferior (cirrhosis of the liver, tumors);

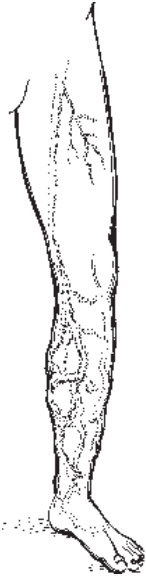


Fig. 58a. Varicose phlebectasia of the lower extremities.

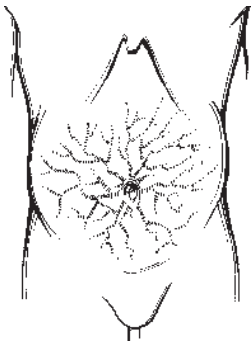


Fig. 58b. "Caput medusae".

– that dilating of the superficial veins, which appeared at once after a long-term edema of the whole limb, that is after thrombosis of the deep veins, is important for ascertaining the secondary (compensate) dilated veins, in which the blood moves, passing by the main venous trunk (as of a collateral circulation).

The dilated sinuous veins with massive edema on the upper limb occur in Paget-Schrotter's syndrome (disturbance of venous outflow from the upper limb, connected with thrombosis of the subclavial or the axillary veins).

During examination the doctor determines the spread of varicose clots along the large and small saphenous veins, along the veins of the abdomen (fig. 58), (v. pudenda externa, v. epigastrica superficialis, v. circumflexa ilei superficialis) (dilation of the hypodermic veins in the region of the umbilicus "Medusa's head" occurs in portal hypertension) degree of phlebectasia, character of dilations, (snake-like, cylindrical, nodal, aneurysmal);

On relative examination the doctor ascertains:

- the color (cyanosis with a marble shade, cyanosis; sudden paleness, which at transition of the limb to a vertical position changes into crimson-bluish color – in obliterating atherosclerosis) and shine of the skin;
- pigmentation and induration of the skin around the dilated and sinuous veins;
- volume of the limb (degree of atrophy, edema);

- edema and cyanosis of the upper extremity, and in a advanced stage, venous collaterals in the upper department of the thorax
 - in thromboses of the axillary and subclavian veins;
- filling of the veins; the overflowed veins of the back of the foot, pain, disorder of sensitivity, which occurs in deep venous thromboses;
- pulsing and seen borders of diverticula, state of the skin in the region of diverticulum (cyanosis, eczematous change, reddening, degree of pallor of the skin of the foot), state of the hypodermic veins of the limb, pulsing of the veins. Dilated pulsating veins in enlarged volume of the limb are characteristic of arterio-venous aneurysms;
- defects of the skin (excoriations, ulcers of the lower-internal third of the anticnemion and necrosies on the toes, crust); in the presence of ulcer – its exact localization, dimensions, manifestation of demarcation line, character of deepening, its fundus, neighboring tissues.
- State of nails (hypertrophy, darkening).

Active movements

Raisings of the leg are carried out; the doctor inspects movements in the patellar, talocrural and interphalangeal articulations, which he compares with the same joints on the able-bodied extremity.

Inspection of active movements in aneurysm of the popliteal artery in position of the patient on his abdomen permits to observe the changes of dimension of diverticulum of the popliteal region at flexion and extension of the knee joint.

Palpation

The doctor determines pulse on the peripheral vessels, its character, rhythm, filling, strain, frequency and also state of the walls of the arterial, and venous trunks.

Palpation is carried out by the fingertips of the II, III, and IV fingers, which are placed along the course of the arteries. Rolling of an artery under the fingers, compression of it till disappearance of a pulse give an idea of a degree of elasticity of the vessel.

At first the temporal arteries and the peripheric arteries of distal departments of the limbs are palpated. In case of absence of a pulse the doctor consistently palpates along the extent of the corresponding arteries of larger caliber with the purpose of revealing a level of disorder of arterial passage.

Pulsation of the arteries of back of the autopodium, the posterior tibial, the popliteal, the femoral arteries, and pulse of the abdominal aorta is determined.

Examination of a pulsation of the vessels the lower extremities together with the other attributes is of great value not only for making a diagnosis, but also for the decision of a question about state of obliterating disease.

Therefore on inspection the feeling of a pulse is obligatory in the below named typical places of passing of the arteries.

Weakening or absence of a pulse is observed in chronic ischemic syndrome of the lower extremities.

Simultaneously a state of the arterial walls (soft, elastic, thickened, hard, calcinosis) is determined.

The arteries are palpated in the following points (fig. 59,60):

1. Temporal (a. temporalis): on the point 1 cm forward of ear auricle at the level of the zygomatic bone, or in a region of the temporal muscle.
2. Carotid artery (a. carotis communis): on the forward surface of the middle third of the sternocleidomastoid muscle, or near an angle of the mandible.
3. Supraclavicular (a. subclavia): supraclavicular regions on the back surfaces of the middle third of the clavicles.

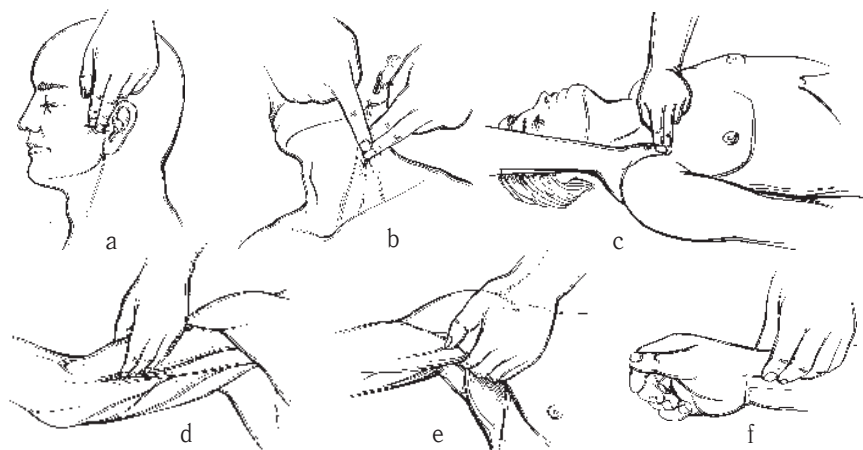


Fig. 59. Palpation of the arteries: a – temporal; b – carotid; c – supraclavicular; d – brachial; e – axillary; f – radial.

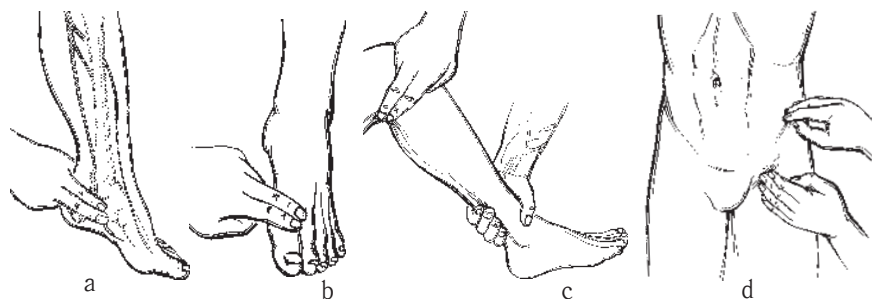


Fig. 60. Palpation of the arteries: a – posterior tibial; b – dorsal artery of the foot; c – popliteal; d – femoral.

4. Axillary (a. axillaris): in axillary fossa on the head of the brachial bone, the arm of the patient is raised to a horizontal level.
5. Brachial (a. brachialis): in an intrinsic fossa of the biceps muscle.
6. Radial (a. radialis): on the radial part of a radial flexor of a hand 2-3 cm proximal of the radiocarpal articulation line.
7. Posterior tibial artery (a. tibialis posterior): between back-lower edge of the tibial (internal) prominence and the Achilles tendon.
8. Dorsal artery of the foot (a. dorsalis pedis): between the first and the second metatarsal bones.
9. Popliteal artery (a. poplitea): on deep palpation of the popliteal fossa with the bent at 120° angle knee joint in a position of the patient lying on his abdomen.
10. Femoral artery (a. femoralis): on the point 1,5-2 cm medial of the middle of inguinal ligament.

The disappearance of pulsation in zone of ischemia and immediately above it is observed in acute ischemic syndrome. The sensitivity in such cases at first is decreased, and then disappears:

Level of artery occlusion	Border line of decrease of the skin sensitivity
Infrarenal department of the aorta	Middle of the abdomen
Bifurcation of the aorta and the iliac arteries	Inguinal region
The external iliac artery	The upper part of the femur
The common femoral artery	The lower part of the femur
The superficial femoral artery	The upper part of the crus
The popliteal artery	The lower part of the crus

For definition of the character of pulsation, the presence of murmur in an aneurysm of the popliteal artery the index fingers of both hands are placed on periphery of a diverticulum; it is necessary to define, whether the pulsation extends in all directions – excentric pulsing or only in one – concentric pulsation. Excentric pulsation is observed in aneurysms, concentric – in organized hematomas or tumors, placed densely to a wall of the vessel:

- by palpation consistence of diverticulum is also determined.

Usually a consistence of an aneurysm is densely elastic; only at enlargement of the dimensions of the aneurismal sac, adhesion of it to the skin, and refined wall, its consistence becomes suppler, soft elastic on the limited region.

- at pressure by the palm on an aneurismatic diverticulum, the latter can be reduced considerably as a result of shift of the blood into a channel of the main vessels – compression symptom;

- besides, it is necessary to determine borders of a diverticulum, pulsation of the vessels of the foot and dermal temperature of the peripheral part of the limb.

Then palpation of the trunks of the large and small saphenous veins is carried out.

The palpation enables to determine the presence of painful consolidations along the venous dilation (phlebitises), of painless condensed regions (venous stones-phlebolithes), that indicates presence of aneurismatic venous varix nodes (varix aneurismaticus).

The doctor should palpate the places of exit through fascia of the insufficient perforating veins that look like dilated fastial hatches. The basic points of placing of the veins are 7, 13, 18, 24 cm higher and behind the intrinsic bonelet on the Kokket's line, higher and behind the knee joint on Boid's point and in the inferior third of the femur on Dodd's line, (fig. 61).

In presence of plenty of venous collaterals it is necessary to determine, in what direction the blood



Fig. 61. Basic places of incompetence of the perforating veins.

in dilated veins moves. For this purpose by index fingers blood is superseded from a vein along several centimeters. Then, the doctor takes away at first one finger and observes the rate and degree of filling of this part of a vein, then blood is superseded once again and the doctor takes away the second finger. In direction of blood flow the filling will be much faster.

Solid edema of the gastrocnemius muscles, enlargement in volume, dark blue phlegmasia occur in acute thrombosis of all veins of the inferior limb.

White phlegmasia is iliofemoral venous thrombosis. Its signs: paleness, pain with solid edema in a horizontal position, shine of the skin. At lowering of the leg the pale color changes into cyanose, which is caused by arterial spastic stricture, which is possible to prove because of absence of a pulse on periphery. The given symptom-complex is characteristic of iliofemoral thrombosis.

Auscultation

Often the femoral arteries are listened lower of the inguinal ligament on its middle third.

Stenoses of the arteries are accompanied by rough systolic murmur. In norm we hear weak systolic murmur.

In chronic ischemic syndrome the arterial pressure is measured on an artery: the patient lies on his abdomen, the measuring is carried out in turn from both sides. The cuff of pressure gauge is applied on the inferior third of the femur; Korotcoff's sounds are heard in the medial part of the popliteal fossa. In norm the pressure in femoral arteries is higher than in brachial arteries: systolic – is 35-40 mm Hg. higher; diastolic pressure – is 15-20 mm Hg higher. In atherosclerosis of the vessels of the inferior limbs the pressure is diminished.

Auscultation in an aneurysm of the popliteal artery permits to detect distinct murmur; it is necessary to establish its coincidence with sphygmus on the radial artery, to determine the transference of murmur to periphery and to the center, conduction of murmur through the bones.

In an arterial aneurysm we hear blowing systolic murmur, which coincides with sphygmus on the radial artery; the murmur is transferred to the posterior tibial artery and the dorsal artery of the foot. In arterial-venous aneurysm we hear murmur like a hum –

continuous with significant systolic intensification and spreading not only on peripheric vessels, but also to the center – to the femoral vessels, the heart, and also the bones. After pressing the femoral artery to a horizontal part of the pubic bone, the murmur, which was heard in an aneurysm, disappears.

For determining venous murmur the large cervical veins are listened. A phonendoscope is put between crura of the dextral sternocleidomastoideus muscle according to situation of the jugular vein. The revealing of continuous murmur more strongly manifested during inspiration and turning of the head to the left side, indicates in the most cases anemia.

Vessel's murmur of returning blood flow at the Valsalva test is characteristic of post thrombophlebitic syndrome of the lower extremities.

The carried out clinical examination frequently does not permit to identify the final diagnosis, therefore it is necessary to resort to determining of special tests and signs of diseases and to apply additional instrumental methods of examination.

Characteristic symptoms

Arterial system

1. Goldflam's sign of foot anemia. The patient in lying position is asked to lift his both legs, straightened in the knee joint and to do quickly 10-15 bending-unbending exercises in talocrural articulations. At this time on the affected leg, especially in the foot region, a sudden paleness is detected in connection with decrease of tone of the vascular wall.
2. Samjuels sign of muscular tiredness (modified). The patient is asked to lift high and to lower (not touching a bed) his leg straightened in the patellar and bent in talocrural joint till complete tiredness or appearance of a pain in region of the gastrocnemius muscle. A healthy man can do up to 20 and more such movements. In presence of the vascular disorder of obliterating atherosclerosis, the patient feels pain already after 10-12 movements. The relative examination of the second limb is carried out.
3. Panchenko's sign. The patient is asked in sitting position to cross his legs putting the affected leg on the healthy one and to

- sit, without changing the position during 3-5 minutes. In the presence of obliterating atherosclerosis there is a sensation of numbness in the foot of the affected leg, feeling of the creeps on the leg, pain in the gastrocnemius muscle, paleness of the foot.
4. Sign of pressing of the toe. One of the toes of the foot is slightly pressed in the region of the final phalanx for a short time (5-10 sec.) in a forward-back direction. After stopping pressure there remains pallor on the plantar surface of the toe, which in a healthy man quickly changes into reactive hyperemia. In obliterating atherosclerosis the normal color after pressing renews with a certain delay. In dominating lesion of the vessels of one of the inferior limbs this method is more convenient to carry out simultaneously on both of feet for relative observation.
 5. Ratshow's assay for the inferior limbs. The patient lying on his back with the straightened extremities. If the patient is asked to lift his both legs at an angle of 45° and to make circular movements by both feet, then the foot of the affected side will become pale earlier than the second one. If then the patient sits on the edge of a table and lowers his legs, the reactive hyperemia will appear after 5 sec. on the able-bodied leg and its veins will be filled after 12 sec., and the sick foot will remain pale and its veins will not be filled. If in the affected foot hyperemia appears only after 30 sec., it is a severe disorder of the arterial circulation.
 6. Means of determining function of collaterals. On examination of the patient with the diagnosis of obliterating atherosclerosis it is very important (for the decision of a question concerning the choice of the method of treatment) to ascertain the state of collaterals. a) In presence of a pulse on the vessels of a foot, the femoral artery is pressed and the state of the limb is observed. If there is no paleness – the collaterals are well develops. b) Moschcowitz test of reactive hyperemia – the leg is lifted for some minutes till it becomes pale, then an elastic bandage or blood pressure cuff of Riva-Rocci's apparatus is applied on the femur pressing the arteries for 3 minutes.

After taking off the bandage or quick letting out the air from the cuff and putting the leg in a horizontal position, the spread of a reddening is observed with a stopwatch in doctor's hand. In a normal state of the vessels the reddening reaches the kneecap after 10 sec., and the toes of the foot – after 30 sec. In obliterating atherosclerosis hyperemia of the toes appears later than after 30 sec., and in the neglected cases of the disease – in 10-12 minutes. In massive thromboses of the trunk-lines vessels and insufficiency of the collaterals hyperemia of the skin reaches the kneecap.

Determining the state of the collaterals by a method of a reactive hyperemia is important for early revealing of atherosclerosis, and also for ascertaining zone of a high-grade feeding of the limb, which can be criterion of a level of amputation in the presence of certain signs.

7. Taking local temperature by the dermal thermometer: for better accuracy it is necessary to carry out gauging of the temperature with the help of a support, which can be easily made of the wire splint; the measuring of the temperature should be carried out strictly on the symmetric places with their notation on the skin in the same time.

Taking the temperature of the inferior limb can be carried out also by placing the chemical thermometer in first inter-digital space. The most exact data of the body temperature are received during testing by thermoelectric devices.

8. Test of cooling. After the patient's anticnemion and the foot of the affected limb is undressed taking of the dermal temperature should be carried out immediately, after 15 minutes – repeated measurements. For comparison the same is made on another limb. This test is based on that fact, that in norm the man's temperature of the naked limb during 15 minutes is reduced on 1-1,5°C (at temperature of the air 14-15°C). In the phenomena of vasospasm and their particulate or complete obliteration without inflammation the ability of the vessels to adapt to environmental temperature is lost and dermal temperature is reduced on 2-3°C.

The test on cooling is important in the initial form of atherosclerosis, when the characteristic signs are not evident. On the other side it is not used in the case of widespread clottage with the inflammation phenomena ("warm leg").

Venous system

1. Trojanov-Trendelenburg's test. The patient is in a lying position. His leg is raised vertically upwards. Stroking in a proximal direction assists moving of the venous blood into the femoral vein. The trunk of the large saphenous vein is pressed in the upper third of the femur and the patient is told to stand on his legs at further compression of the vein. If after decompression fast filling of the veins owing to reverse blood flow is seen, the sign is considered to be positive. It indicates insufficiency of the venous valves, in particular – the ostial one, in the place of transition of the large saphenous vein into the femoral vein. Absence of reverse blood flow at slow filling of the veins from below is negative test. In the pure state negative sign is rarely occurred, because even in primary phlebectasia there is relative insufficiency of valves and the sign becomes mixed.

For simplification of definition of Trendelenburg's test it is possible after raising the inferior limb to apply on the upper third of the femur a thin rubber tourniquet (from drainage tube) so that only the saphenous veins can be pressed. A clamp fixes the tourniquet, the leg is put in a horizontal position and examiner checks a pulsation of the arteries of the foot, which should be present (correctness of applying a tourniquet). The patient is asked to stand on his legs and after some inspection of filling of the veins the tourniquet is taken off. In insufficiency of valves the fast filling of the veins from above to downwards is visible.

It is possible to determine localization of incompetence of the perforated veins, for this reason the test is repeated some times, applying the tourniquet higher and lower of the place of the greatest filling of the vein. If after standing the vein between the garrotes is filled more quickly, than in the places higher and lower of the tourniquets, then the incompetent

perforated vein is between the tourniquets. If during repeating the test the tourniquet is taken off from the femur at the moment of standing and a rapid filling of the veins passes from above downwards, it indicates incompetence of ostial valve of the large saphenous vein.

Sometimes dilated veins, which cause series of troubles, remain invisible during examination, in such cases a trunk of the large saphenous vein should be previously determined by palpation and on the skin its course should be marked by brilliant green solution. Simultaneously with compression of the vein on the upper third of the femur the fingertips are put on the marked line, which after stop of compression accept a jerk of reverse blood flow.

2. Pratt's test. In lying position of the patient after emptying of the varicosity veins in the upper third of the femur a rubber tourniquet is applied, which compresses the large saphenous vein. Then an elastic roller is applied on the limb from the toes to a tourniquet, and the patient stands on his legs. An elastic roller is taken off, coil by a coil. In a formed interspace 10-15 cm wide between the tourniquet and bandage the second elastic roller is applied, with which the leg is encircled gradually from above downwards after rounds of the first bandage. The appearance of the intense segment of the varicose veins between the two bandages indicates incompetence of the valval device of the perforated veins, through which the given segment of the saphenous vein is filled from the deep venous net.
3. Hackenbrukh's coughing test. In tussis contraction of the diaphragm passes with some decrease of a lumen of the vena cava inferior; the returning venous wave, which is quickly formed, moves along general and superficial iliac veins into the femoral, and from here in failure of the ostial valve – into the basic trunk of the large saphenous vein; the fingers put on the skin feel the evident jerk.
4. Delbet-Pertes test, the test of passage of the deep veins. The patient standing erect; an elastic roller is applied on his upper third of the femur, to compress only the superficial veins; after

walking during 2-3 minutes a state of veins is inspected. In the presence of sufficient anastomoses with the deep veins varix nodes are flattened, become less intense. On the contrary, in compensative dilatations as a result of bad passage of the deep veins (clotage of the femoral vein) the superficial veins after applying bandage are not decreased, but suddenly swell. The value of this test is, that in collateral dilatations of the saphenous veins operative procedures on the veins are contraindicative (veins dissection, ligation).

Arteriovenous aneurysms

1. Korotkoff's assay. The raised limb is bandaged with an elastic roller from periphery to the center. The artery above the aneurysm or immediately in a region of aneurysm is compressed till the pulse disappears, and on the region lower of the aneurysms blood pressure cuff of the Riva-Rocci's apparatus is applied, in which air is forced up to 180-200 mm Hg. After that the limb is lowered, an elastic roller is taken off and, the examiner continues to press the artery, gradually diminishing the pressure, he inspects a discoloration of the skin in the region of the foot. At the moment of appearance of hyperemia of the skin, which indicates collaterally circulation, on a pressure-gauge digit of blood pressure in collaterals is marked.
2. Dobrovolska's sign. After determining the pulse rate over the radial artery and measuring of the arterial pressure, the adducting artery of the aneurysmal sac is compressed. It is possible to define decrease of the pulse rate by 10-15 pulsations per minute and increase of pressure in 10-12 mm Hg. On checking the able-bodied limb the sphygmus and pressure remain without changes. This sign indicates disorder of cardiac function under influence of turbulences of the blood, which are formed in an the aneurysmal sac in arteriovenous aneurysm of the popliteal artery.

Instrumental and apparatus methods of diagnostics

Warm generating diagnostics – is registration of infrared radiation of the skin surface.

Capillaroscopy – is observation of the form, length and width of the capillaries with the microscope. It defines index of the open capillaries.

The volumetric sphygmography – graphically records the pulse variations of the arteries and volume of the tissues of the extremity by pneumatic cuff in four points.

Arterial oscillography – is a graphic record of changes of the wall volume of the main vessels.

Rheovasography – is based on registration of the variations of the electrical resistance of tissues, which changes depending on the blood filling of the limbs.

Impedance occlusive plethysmography – is based on that fact, that the change of volume of the venous blood in the inferior limb causes change of electrical resistance, which is recorded graphically.

Phlebomanometry – is determining of pressure in the deep veins. An elastic bandage is applied on the anticnemion till compression of the saphenous veins, one of the veins of the dorsum of the foot is punctated and needle is connected with the manometer.

Angiography

1. Puncturing arteriography – the contrast material is introduced immediately into one of the peripheral arteries (femoral, humeral);
2. Seldinger's aortoarteriography – retrograde into the aorta through the femoral or brachial artery a special radiopaque probe is inserted, contrast material is injected through it and examiner receives a series of snapshots;
3. Translumbar aortography – the aorta is punctated by a special needle on the level of the XII thoracic and 1 lumbar vertebrae, after introduction of contrast agent and x-ray films are made.

Transfemoral angiography in 2 projections with following celiacography.

Ultrasonic fluorometry – based on Doppler's effect and consists in registration of a fascicle of ultrasonic vibrations, reflected from a surface of the blood, which moves in the vessel. It allows to determine linear rate of blood flow, and localization of a clot and to determine a degree of passage of the main vessels below the occlusion. The ultrasonic gauge, which consists of two piezoelectric crystals, moves on the skin of the patient in a projection of the vessels. At this time one crystal is sending an ultrasonic signal into tissues, and another one is accepting the reflected wave from the moving blood. The

frequency of reflection of a signal from the blood varies depending on the speed of its movement.

Radioinfective phlebography with the use of marked Fibrinogenum, permits to determine early venous thrombosis.

Determining of tissular blood flow according to clearance of radioactive ^{133}Xe and according to clearance of Hydrogenium by L. J. Kovalchuck.

PROCEDURE OF EXAMINATION OF THE LOCOMOTORIUM

During questioning a patient, except for the complaints, if the state of the patient permits, the doctor should find out: whence, when and by what he was transported, how much time passed from the moment of trauma, whether there were previous traumas, the character of trauma must be determined (street, industrial accident, railway, everyday, sport etc.). It is necessary to define circumstances of traumatizing, mechanism of damage, whether there was loss of consciousness and for what period of time, what help was given, how the patient was transported to a hospital.

After it the objective examination is made with the use of general clinical methods.

Examination

It is necessary to compare the constitution and form of symmetric parts of a body – sick place with the symmetric unaffected region. The doctor determines visually positions, form, mobility of a body and the limbs, state of mild tissues (edema), and symmetry dermal folds, contours of the joints, of an axis of the organ, etc.

All of the patients, except for seriously persons, should be examined both in a horizontal, and in a vertical position. It is very important in diseases of the inferior limbs, column and other pathologies.

It is possible to determine according to a position of the parts of a body not only the character of a disease, but also to ascertain duration and degree of gravity of pathology.

On examination of the skin and the mucous membrane the attention is paid to paleness or hyperemia of the skin, its moisture or dryness, the presence of traumatic damages: wounds, ecchymoses, excoriations,

their localization, dimensions, coloring, etc. The examiner should also pay attention to a degree of development of the muscular tissues in general and if certain regions, determining the presence of atrophy or muscular hypertrophy, contractures, spasmodic twitching of the certain muscular groups. A degree of development of the muscles is determined according to their volume and relief on the symmetric regions. The doctor examines gradually all of the joints of the upper and inferior limbs, paying attention to a position of the limbs, their dimensions and form (contours), and also to a state of the skin. Besides the volume of active movements in the joints is determined.

The function of the joints can be determined in the following way the patient is asked to stand up (from a chair), to walk some steps, to squat to bend the arms in the ulnar joints and to lift them up, to clench his hands, to lift any subject from the floor and to do other exercises. In the presence of manifested pathology in one or another joint it is necessary to ask the patient to show the most possible movements of it.

It is very important during the examination to determine changes of a position of the limb concerning its axis. In norm the axis of the inferior limb passes from the spina iliaca anterior superior of the iliac bone through the patella and interspace between the I and II toes of the foot. The axis of the arm is a line, which passes through the center of the head of the brachial bone, head of the radial and ulnar bones (fig. 62).

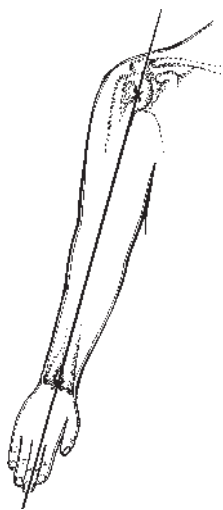


Fig 62. Axis of the upper limb

Deviation of the limb from an axis can be deep inward or outward with formation of an angle. Depending on it we can distinguish valgus deformation (angle opened outside) and varus deformation (angle opened deep inward). For example, the deformity of the anticnemion in the knee joint outward from the normal axis is called genu valgum, inward deformity – genu varum. Deformity of the anticnemion outward and inward along the diaphysis is called crus valgus s. crus varum, the same deformity in the other segments – humerus valgus, humerus varum, femur valgum, femur varum (fig. 63).

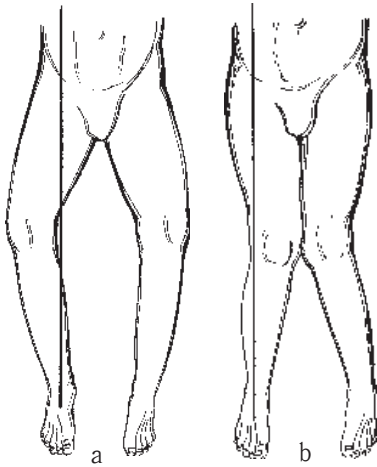


Fig. 63. Deformation of the lower extremities: a – genu varum; b – genu valgum.

The axis of the upper and inferior limbs changes in fractures, dislocations, irregular consolidated fractures of the bones, ankyloses. The change of axis can be of congenital character or in deformity of the bones during their diseases (rachitis, osteomyelitis, syphilis, tuberculosis).

The examination permits to establish changes of the affected organ: the presence of traumas of the skin and mucus, smoothness of contours of the joint in arthroses or hemarthrosis, tumescence in hematoma of the soft tissues, deformation of the limbs or change of their length in fractures and dislocations, etc.

Palpation

The palpation is the following stage of examination, which supplements the data, received during review. By means of palpation the doctor can determine changes of local temperature, painfulness, dermal thickness, turgor, fluctuation, position of the articular ends, osteal orientation-points, crackling and crepitation in the joints and tendons, pathological mobility, which occurs in the region of fracture of a bone.

The muscles are palpated with pressing on them and making a fold of them by the fingers in the region of inspection simultaneously, carrying out passive movements in turn in all neighboring joints. In such a way the doctor receives the data about elasticity of the muscles and degree of their tension (muscle tone), reveals the region of consolidations and painfulness, which indicate inflammatory lesion (myositis, dermatomyositis, trichinosis). Foci of petrous consolidation in depth of the muscles occur in the presence of calcium deposits (ossification), which is characteristic of hyperparathyroidism, toxoplasmosis. It is necessary to remember, that pain in the muscles quite often occurs in such infectious diseases, as leptospirosis, brucellosis, tularemia, typhoid.

Palpation permits to determine defect of tissues such as depression (in disruption of the muscles, tendons). The disruption of the two-headed muscle of brachium is accompanied with characteristic depression of the muscle and change of its configuration in contraction, on strain of the gastrocnemius muscle the depression (hollow) is determined in the region of Achilles tendon in its disrupture, etc.

In the presence of inflammatory processes in tendons vaginas (tendovaginitis) and stratification of fibrin a special noise (crepitation) can be heard during bending, unbending exercises in the region of the affected finger joints.

In fractures of the tubular bones a precise crepitation is heard owing to friction of the osteal fragments with each other. Parchment crunch is observed in cysts of the central bones, myelogenous sarcomas and fibrinous ostitis, at pressing on the thin plate of the cortical substance of a bone.

An important information can be received in cases of dislocations of joints, when it is possible to palpate joint surfaces of the injured joint. In norm these surfaces cannot be palpated. Besides, the change of the contours of a joint, and the sign of "resilient fixation" (the limb assumes the previous forced position during passive movements) permit to identify the diagnosis of dislocation (fig. 64).

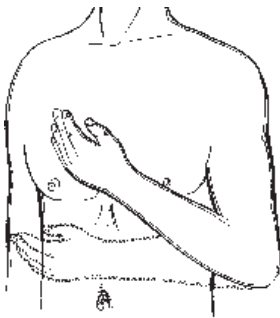


Fig. 64. A sign of "resilient (spring) fixation" in dislocation in the ulnar joint.

In series of cases it is possible to determine by palpation the place of fracture according to the sign "of pathological mobility", and to palpate the osteal fragments.

On examination of the affected joint in general the articular cleft, tendons and synovial bursas are palpated in order to determine the presence of painfulness and other pathological signs. So at accumulation of superfluous amount of fluid in the joint emptiness it is possible to find out a sign of fluctuation (arthritis, hemarthrosis). By a dorsal side of a hand the examiner determines temperature of the skin above the affected joint, on adjacent to it regions of the extremity

and above the symmetric joint of the other limb. After that, holding a joint by one hand, the doctor makes different movements of it in all possible planes, which permits to determine amplitude of passive movements, to find an excessive over bending, hyper mobility, or not inherent movements of the given joint movements (instability), and also presence of crunch and crepitation.

The excessive tumescence in the region of one of the joints can occur due to an inflammation or traumatic lesion of the tendon, its vagina or synovial bursa (periarthrititis), and also in tumors of the bone, cartilaginous part or soft articular tissues. Local painfulness in the field of a joint, sometimes associated with hyperemia and hyperthermia of the skin above the affected region, is typical of periarthrititis.

The lesion of tendons (tendosynovitis) results in restriction only of those active movements, in which the given tendon takes part, and they are sometimes accompanied by characteristic "clicking" sound. At the same time, the other active and passive movements in the given joint are preserved in complete volume. In lesion of the peripheral nerve or separate muscles the active movements can be restricted only in the certain planes.



Fig. 65. Axial loading of the humeral bone.

Instability of the joints and their exercise mobility can be caused by disruption of the tendons, changes of the joint capsule, disorder of the joint surfaces due to destruction of a cartilage. Hyper mobility also causes weakness of ligamentous apparatus.

For definition of pain points in lesions of the osteal tissue the palpation should be carried out not by the whole hand, but by one finger along the bone, beginning from an uninjured region in direction to the place of disease. Local painfulness is an essential attribute of a lesion of the bone, in particular in fractures, without clinically manifested shift of fragments. The other method of determining local painfulness in the region of fracture is loading on an axis – light pressing or percussion perpendicularly to an axis of a limb or the body (fig. 65).

Percussion and auscultation

Percussion and auscultation of the organs of the movement are of smaller value than during examination of the internal organs. However, due to them it is possible to receive some additional data. By means of percussion it is possible to determine the place of the severest local pain, making a superficial percussion from the able-bodied tissues to the place of lesion.

The method of local auscultation in certain cases (intra-articular lesion, fractures of the long tubular bones, aneurysm) can be used for receiving additional diagnostic data, for example, for definition of crepitation.

In fractures disorder of conduction of sound through the bone is also revealed. So, during examination of the inferior limbs a phonendoscope should be put on a region of a symphysis, on examination of the upper extremities – on a region of the handle of the breastbone. A slight impact is done by the fingers in the region of osteal prominences of the both limbs. On the affected side, below the place of fracture, intensity of a sound is suddenly reduced or absent. After knitting of the broken bones the sound conduction is renewed.

Measurement of length and volume of parts of the body, and also definition of mobility in the joints take the important place in inspection of diseases of the locomotorium . Such gaugings should be carried out on both: the affected and able-bodied limbs. The received results are to be compared.

Measuring of length can be carried out by eye, by way of comparison of symmetric regions of the body, of segments and symmetrically situated osteal prominences. For this purpose the patient is put on his back, placing his extremities symmetrically and the doctor compares topography of the osteal prominences – spina iliaca anterior superior, large trochanters, kneepans, condyles relatively with each other. Discrepancy of the mentioned osteal prominences indicates shortening of the extremity. Depending on a change of the position of the trochanters, kneepans, condyles prominences the cause of the extremity's shortening at the expence of the femur or crus can be determined.

The length of the upper limb is also compared according to symmetric position of the osteal prominences in a posture of the patient "with the upper limbs at the sides".

More exact data can be received by symmetric measurement of length of an extremity by means of a centimeter tape. The length of a lower extremity is measured from the spina iliaca anterior superior of the iliac bone up to the medial condyles (relative length), from the large trochanter up to the medial condyles (absolute length), length of the femur – from the large trochanter up to the joint slot of the knee, the length of the anticonemion – from the knee joint up to the ectocondyle. For measurement of upper extremity of the following gauging are carried out: length of the upper extremity – from the acromial end of the clavicle up to tip of the third (middle) finger; of the brachium – from the acromial end of the clavicle up to the ulnar processes and of the forearm – from the ulnar appendix up to the awllike appendix of the radial bone (fig. 66, 67).

Volume of the limbs is measured on the identical levels of symmetric parts of the extremities according constant osteal orientator. Difference in volume of the limb in the patients, who had trauma or disease of the locomotorium indicates enlargement of the volume at the expense of edema, hematoma, hemorrhages, shift of the osteal fragments (fig. 68).

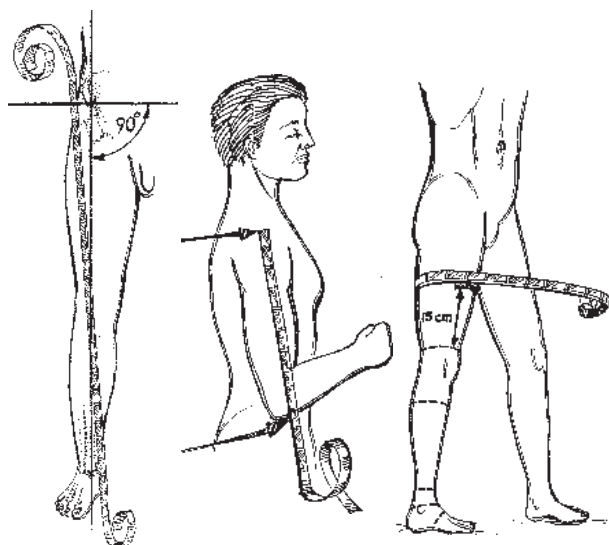


Fig. 66. Gauging of length of the inferior limb.

Fig. 67. Gauging of length of the brachium.

Fig. 68. Gauging of volume of the femur.

disease of the locomotorium indicates enlargement of the volume at the expense of edema, hematoma, hemorrhages, shift of the osteal fragments (fig. 68).

On examination the muscular force is determined according to ability of the patient to make an active resistance to the passive movements, which are carried out by the muscles (bending

or unbending of the limbs), or on the contrary, according to ability of the patient to make the active movements in joint, overcoming the resistance, which is made by the doctor's hand. Doctor's sensations give him an opportunity to compare the force of the symmetric muscles. Exacter objective data are received on inspection of force of the muscles with the help of a dynamometer.

The doctor begins to determine volume of motions in the joints from establishment of the active motions, which the patient can do himself. The doctor checks the ability of making passive motions, he establishes the fact of absence of active or passive motions, their limitation and painfulness. The information, received at measuring motions with the help of a special device – of a goniometer is more objective . A pointer, of the instrument moving on protractor, indicates volume of motions in a joint in degrees (fig. 69). The results are compared with the average parameters of a healthy limb or average statistical indexes of a healthy person of the same age and sex.

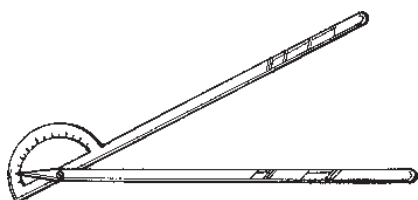


Fig. 69. Sklifasovsky's goniometer.

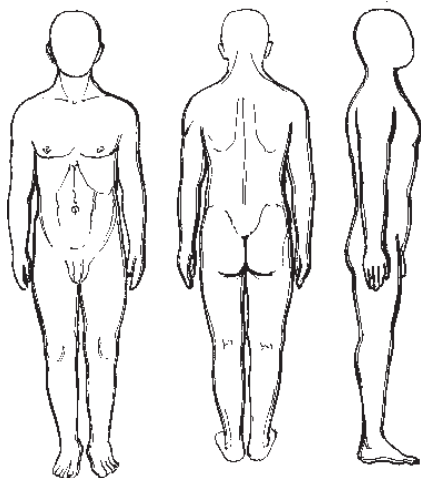


Fig. 70. Neutral-zero method for definition of function of the joints: zero position of the joints in direct and lateral projections.

The initial position for the shoulder joint is free disposition of the upper limb along the trunk, for the ulnar, radiocarpal wrist joints – a state of complete extension in joints at an angle of 180° . For the hip and patellar joints a normal angle of a position is 180° in an erect position of the body, for the talocrural joint – 90° to an axis of the anticnemion (neutral-zero method) (fig. 70).

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For measuring motions in the humeral and hip joints one of branch is put along the body, and another one is moved together with the motions of the limb, carrying out and turning aside. For measuring motions in the other joints one of goniometer's branch is fixed along the axis of the distal department, and another one – along the proximal department of the limb so that the hinge of goniometer should be on the level of the joint's cleft (fig. 71).

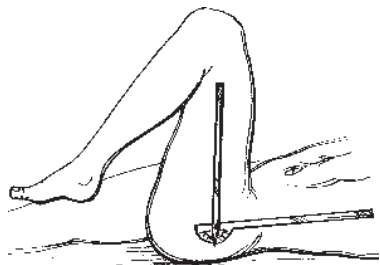


Fig. 71. Definition of an angle joint with the help of a goniometer.

According to deflection of the branch with the distal department of a limb an angle of motion in joints is by protractor. Using special goniometers, it is possible to determine other kinds of joint motions: rotating, turning aside, etc.

Restriction of volume of joint motions can be of different character: from the complete immobility (ankylosis) to restriction of motions (contraction).

Ankylosis can be bony owing to knitting (joining) of the bones, which form a joint, or due to formation of fibrous proliferation between the joint's surfaces (fibrous ankylosis). Immobility in joints is possible in scleroses and calcification of the soft tissues, which surround a joint (abarticular ankylosis).

Degeneration of the muscles, disturbance of innervations, and in dislocation – disorder of anatomical interrelation of the joint surfaces and spastic contraction of the muscles are considered to be the most often causes of a rigor contraction.

The clinical examination of the patient with diseases or traumas of the locomotorium should be supplemented by an obligatory inspection of the vascular and peripheral nervous systems on the affected side with the purpose of determining its involving in pathological process. The underestimation of state of the vascular bed and the peripheral nervous system in number of cases can result in diagnostic mistakes and influence significantly on results of treatment of the given contingent of the patients.

For specification of the diagnosis in the patients with diseases of the locomotorium the following instrumental methods of examination are used: puncture of the muscular tissues and joints, roentgenological methods, computer tomography, rheovasography, oscillography, electromyography, etc.

In the given section we have considered only general principles of examination of the locomotorium. The special methods of examination of the separate joints, the thorax, and the column are studied during the Orthopedics and Traumatology course.

III. LOCAL EXAMINATION OF A SURGICAL PATIENT IN SOME PATHOLOGICAL STATES

PROCEDURE OF EXAMINATION OF PATIENTS WITH PURULENT – INFLAMMATORY PROCESSES OF SOFT TISSUES

Anatomical-physiological peculiarities

Inflammation – is the phylogenetically developed form of reaction of the living organisms to injury. Manifestation of inflammatory reaction and its spreading depend on degree of the injury and on the volume of the injured tissues and do not depend on the character of the cause of injury. Reaction of the living tissue to mechanical, thermal, chemical and other possible injuries will be identical and, so, not specific.

Development of an inflammation is closely connected with reactivity of an organism, as a whole. Body resistance influences intensity of an inflammation. On the other hand, the inflammation influences state of reactivity. More or less extensive inflammation in a man is accompanied by fever, leukocytosis and other changes of reactivity.

The direction of spreading of the purulent process may be different. Sometimes it covers only superficially situated tissues on a limited region (abscess, furuncle, carbuncle). The spread into deep tissues to a great extent results in formation of diffuse muscular and intermuscular phlegmons. The purulent inflammation of the subcutaneous basis looks like a spreading suprafascial phlegmon with separation of the layers and damaging of significant regions of the skin.

The result of local reaction of an organism to a purulent micro flora is the development of protective barriers. First of all a leukocytic shaft is formed which limits and separates a source of abscess from the internal environment of an organism. The lymphatic vessels and lymph nodes are also barriers. In the process of development of tissue

reaction around the purulent source and multiplying of cells of the connective tissue a granular shaft is formed, which effectively marks off a focus of an inflammation.

At long existence of a limited purulent process from its surrounded granular shaft solid pyogenic capsule is formed, which serves as an obstruction to diffusion of a micro flora.

The presence of a high-virulent micro flora and weak reaction of an organism retard the organization of the protective barriers, that quite often leads outbreak of microbes through the lymphatic paths (the vessels, nodes) into the blood flow. In these cases the general purulent infection is developed (sepsis).

Peculiarities of complaints and anamnesis

The most common complaint in purulent – inflammatory processes of the soft tissues is a pain (dolor) in the region of lesion. In spite of that the sensation of a pain has only subjective character, the degree of its manifestation, as a rule, is in direct dependence on activity of the inflammatory process. Sensation of pain is connected with the stimulation of nerve endings in the focus of inflammation. Sudden relief of pain in increasing inflammation is connected with necrosis of tissues and together with the nerve endings. As a rule, the pain is constant, but in some diseases it has special peculiarities – for example, a pulsating pain in the lowered hand in whitlow.

Redness (rubor) of the affected area – is not a constant attribute, it depends on degree and depth of location of the inflammatory process.

Frequently tumescence (tumor) of the affected region occurs. The patients may complain of the presence of abscess in this or that part of the body, appearance of purulent excretions from it on its involuntary opening.

Besides the patient may complain of the general disorders of the organism – general weakness, fever, increased temperature. Vomiting, headache, and etc. may be observed.

On describing the history of the given disease it is necessary to specify time of appearance of the first attributes of the disease and its development till present and that what the patient considers to be the cause of the given pathological process. Different damages can cause the disease:

- a) *mechanical* (excoriations, a wound), including poor hygiene of the body, contamination of the skin with engine oil, lime, coal dust;
- b) *physical*: thermal (burns); barergical (cupping glasses); radial (ultraviolet rays, heat rays, ionizing radiation);
- c) *chemical* (action of acids, alkali and other chemical stimuli);
- d) *biological* (an invasion of pathogenic flora).

It is also necessary to find out, what treatment was carried out earlier and its results.

In anamnesis of life a special attention should be paid to ascertaining the state of general-sanitary, industrial and everyday life conditions, rationality of diet and adequate nutrition, the presence of concomitant diseases (diabetes mellitus, anemia, disease of the skin). It is necessary to specify allergic anamnesis – concerning previous treatment of the patient by antibacterial drugs (first of all antibiotics).

Objective examination of a patient

Features of an assessment of the general state

A patient's general state depends on the state of reactivity of the organism, and is also determined by the amount of bacterial toxins and decomposition products of tissues, which have penetrated into the organism from the source of microbial dissemination and may depend on the kind of the agent (factor), which has caused inflammation. Virulent microbes, excreting strong toxins, usually cause a manifested general reaction which may result in endotoxiosis. Its clinical manifestations are: fever, darkening, and sometimes and loss of consciousness, a headache, malaise, high pulse rate, disorder of function of the liver and the kidneys. The body temperature may be elevated up to 40°C, sometimes repeated strong rigors, appetite loss and constipation may appear. Enlargement of the liver, the lien and icterus of the sclerae occur quite often. In hyperergic general reaction of the organism to a purulent intoxication the foregoing signs are distinctly manifested, and in patients with normoergic and hypoergic reaction they are moderate or not manifested.

General reaction of an organism in purulent disease gives the clinical picture similar to sepsis and to some contagions (typhoid, brucellosis, etc.). Therefore such patients need attentive clinical

examination for revealing the initial source and entrance infection atriums. In patients with manifested clinic of endotoxiosis first of all it is necessary to exclude an infectious disease and development of sepsis. Absence of clinical betterment after surgical opening of the initial focus of purulent process may be quite often caused by this complication.

So, the general state of the patient can be assessed as satisfactory, medium difficult, difficult.

Body temperature – is subfebrile (between 37° and 38°C), moderate increased (between 38° and 39°C) and high (between 39° and 40°C), mainly of constant type.

The doctor should determine pulse and respiration rate, in difficult cases – fall of the arterial pressure.

On a deep palpation of the organs of the abdominal cavity the enlargement of the liver, the lien may be determined.

Place (location) of disease (Locus morbi).

Examination

Such local clinical attributes are found out:

- a) disorder of function of the affected region (functio laesa) – the forced position or restriction of movements;
- b) Redness (rubor) – arises as a result of hyperemia, caused by increase of blood filling of the given region. Hyperemia has no distinct borders from the healthy skin, in contrast to the erythematous form of erysipelas, when redness of the pathological region is sharply circumscribed;
- c) a tumescence (tumor) – is well-manifested morphological attribute. Simultaneously with a tumescence intensity of the skin in the place of inflammation is considerably enlarged;
- d) presence of an abscess in this or that part of the body. Frequently by the kind and localization of an abscess it is possible to make a correct diagnosis. So, redness in the region of hair follicle with the further formation a necrotic slough ("core") is typical of furuncle; in furunculosis a number of furuncles on different parts of the body is observed; in carbuncle on the infiltrated purple-red skin one can see boils with multiple formed sinuses; in hydradenitis (inflammation of sudoriferous

- glands) – it is localized mainly in the axillary regions, single or multiple consolidations with hyperemia of the skin above them are found out. These formations rise above the surrounding tissues, a purulent slough is absent;
- e) the local clinical attribute of progressing purulent inflammation is a streak of hyperemia on the skin along the course of the lymphatic vessels (lymphangitis);
 - f) sometimes during general examination the increased lymphatic nodes (lymphadenitis) are found out. Hyperemia of the skin occurs rarely above the lymphatic nodes;
 - g) in anaerobic clostridial infection the following signs on examination are found out: edema, paleness of the skin, blue-crimson spots and streaks, fast enlargement of an edema, which is proved by "symptom of ligature": the ligature tied around a limb quickly cuts into the skin;
 - h) the presence of pathological excretions from a wound or an abscess, which has opened itself. Discharges can have serous, purulent, hemorrhagic and mixed (for example, seropurulent) character. Blue-green color of excretions indicates the presence *Pseudomonas aeruginosa* in pus. Yellow, white pus is observed in staphylococcal infections, green – in inflammatory process, which is caused by *Streptococcus viridans*, dirty – grey pus with unpleasant odour is observed in intestinal flora, *Proteus vulgaris*. A constant attribute of putrefactive decomposition of tissues – is appearance of a specific odor with different shades, depending on the character of an agent (factor): a smell of meat, that putrefies, is observed in the development of *Cl. Sporogeneus* in wounds. An odour putridity, mould appears in the development of fusospirochetal groups of agents in wounds. In bacterioid etiology of unclostridial anaerobic infection (UAI), one can smell an unpleasant ichorous, sweetish odor from a wound, opened abscess or phlegmon. The cutaneous and subcutaneous dropsy is determined on the edge of a pathological focus. Hyperemia is not manifested, mainly cyanosis is observed. If an abscess is situated under the skin or coated with a crust, on puncturing, as a rule, no pus is removed. After

operative opening of a focus the surgeon sees a necrotic fetor detritis, which consist (in dependence on depth of diffusion of the process) of the affected skin, hypodermic basis, fascias, aponeurosis and muscles.

Type of invasion is characteristic of UAI. If in the center of a focus the process penetrates mainly in depth of tissues, on the surrounding area it is spread over the interfascial spaces and muscles. The borders of localization of necrosis are wider than visual changes on the skin. There is no pain in the center of an abscess, it can be determined by palpation only on the surrounding area. Color of the affected tissues and exudate is from dirty – grey to brown with drops of fat, scraps of the muscular and fastial fibers. As a rule, the affected tissues do not bleed, are easily broken, pulled, a scalpel may "come down" into such tissues.

Palpation

By this method of examination the doctor determines: presence of edema, painfulness, local elevation of the skin temperature, the form and borders of infiltration, its consistence, the presence of fluctuation. It is possible to determine crepitation in the presence of clostridial infection.

The presence an edema is determined by pressing with a finger in the region of infiltration. The formation of visible "socket", which does not disappear at once, is observed.

Pain in the region of inflammation can be found out, both at pressing with a finger, and on palpation of the pathological source.

Elevation of the local dermal temperature is determined by putting of a palmar surface of the fingers on the tumescence place (comparing it with the temperature of a healthy side).

With the help of this method the exact palpable borders of infiltration, its consistence, which may be soft, solid; solid- or soft elastic. In solid infiltration it is necessary to determine, whether the consistence is even everywhere and whether there is some softening. For this purpose the doctor carries out light superficial palpation by his fingertips from periphery to the center. The sensation of more supple consistence indicates softening, that is an attribute of abscess formation in infiltration.

The presence of pus may be ascertained also with the help of determining of fluctuation, if the wavelike motion is transferred in two directions perpendicular to each other (real fluctuation).

Hypodermic emphysema in clostridial anaerobic infection is determined by sensation of "crackling" on palpation.

In the presence of lymphadenitis the palpation of lymph nodes is painful, they are of soft or moderate solid consistence.

Laboratory, instrumental and apparatus methods of examinations

Laboratory examinations are clinical and biochemical. In general blood test the following attributes are observed: reduced amount of the erythrocytes, the appearance of their unripe forms, the reduced hemoglobin, leucocytosis, a deviation of the leucocytic formula to the left, considerable increase in the erythrocyte sedimentation rate.

In general urine test the appearance of protein, cylinders is revealed, which indicates the development of endotoxycosis.

Then the content of albuminous fractions of the blood changes. In severer intoxication there is a smaller level of albumins and relatively larger level of globulins. The elevation of the ureal level is observed.

Instrumental examinations. To these methods belong: examination by a probe with a bulbous-end, and also the paracentetic biopsy, which allows to diagnose the presence of pus in deep tissues and to use microbiologic and cytological examinations. Except for quality content, microbial quantity should be determined.

In rare cases, difficult for diagnostics, it is possible to use the ultrasonic examination, computed tomography, and the magnetic-resonant tomography.

PROCEDURE OF EXAMINATION OF PATIENTS WITH A SYMPTOM-COMPLEX "ACUTE ABDOMEN"

"Acute abdomen" is a symptom-complex, which develops due to affecting or acute disease of the abdominal cavity and internal organs, in which the attributes of complication are obvious. But the course of the main disease is hidden or not evident, and it's very difficult, sometimes even impossible, to diagnose the main disease. The patients need urgent hospitalization for receiving surgical help.

The inspections are made in a certain sequence.

The subjective status. The basic complaints

Pain – a sign, which is a usual attribute of accompanies a symptom-complex "acute abdomen". The questions concerning detailing of pain should be put in a certain sequence:

What? – The character of a pain – can be acute, ache, lancinating, spasmodic, especially in combination with intestinal murmur, gradual, sudden; intensity, pain process (initial pain and pain during inspection).

Sensation of heartburn (whether there is inflammatory process, defects of the mucus membrane of the stomach, its reaction to stimulation). The presence of sensation of pressure, overfilling, inflation (in over-expansion of the deep layers of walls of a gastrointestinal tract). Pain can have character of attacks, which manifested themselves as colics (the intestinal, appendice, liver, renal)

Where? – Localization of a pain (indistinctly localized – generally visceral; localized according to an organ – somatic), radiation of a pain.

When? – Does the pain occur: constantly, episodically, periodically.

Why? -The doctor determines the factors, which provoke a pain: emotional, physical strain, traumatic damage, position of the body, inflammation, ischemia and so on. It is necessary to determine signs, which accompany pain (disurical, dyspeptic, increase of pulse rate level of arterial pressure, temperature, etc.).

Vomiting – in a sign of an acute abdomen it always occurs after pain, and has reflex character. It is necessary to describe it in detail (acidic, bitter, rotten, with admixtures of slime, of the blood, of the food eaten long ago; whether the patient feels better after vomiting).

Disorders of evacuation of bowel's gases and stools – are connected with the phenomena of dynamic and mechanical ileus. Discharges: slime, the blood, etc.

Temperature, its level and changes.

Features of an anamnesis: previous surgical interventions. In women – gynecological anamnesis (diseases, status of a menstrual cycle, time of the last cycle).

Examination

The attention is paid to a position of the patient (compelled, disturbing, the patient changes his pose, adynamia, depressed). Suffering expression on the person's face, its paleness, angular contours, sunken

cheeks and eyeballs (Hippocratic face) – will cause suspicion of acute surgical disease including inflammation of the peritoneum.

On examining the mucous membranes, the conjunctiva, the skin signs of anemia, icterus, disorders of cardiovascular activity can be found. The dryness of the skin and decreasing of turgor are typical of states, which manifest the water-soil disturbance

The tongue: dry, coated, stratification, relief and so on.

On examination of the abdomen the doctor should pay attention to the presence of postoperative scars, their localization, defects, status, dimensions.

- form of the abdomen: even diverticulum, (moderate obesity, intestinal paresis, accumulation of the fluid, irritation of the peritoneum);
- uneven diverticulum of the anterior abdominal wall – ileus of organs of a gastrointestinal tract, local inflammatory processes of the abdominal wall, cavity (infiltration, abscesses), tumors: benign, malignant;
- retracted belly – extreme exhaustion of the patient, strain of the abdominal muscles in the beginning of peritonitis ("board-shaped abdomen");
- absence of the respiratory motions of the anterior abdominal wall – a sign of diffuse peritonitis and phrenoplegia.

In localized peritonitis, paralysis of one of the domes of the diaphragm, we can observe uneven "lag" of one of the sides in respiration.

The presence of peristalsis is determined. Visible intestinal peristalsis (Schlange's symptom) indicates the intestinal ileus. Visible gastric peristalsis indicates obstruction of the antral part of the stomach.

On examination the patient is asked to inflate and deflate by breathing his abdomen (Rozanov's sign). The patients with acute abdomen will hardly do this procedure due to pain – irritation of the peritoneum (positive Rozanov's sign). This method enables us to differentiate pathology of the ventral cavity from the retroperitoneal pathology.

The presence of a violet pigmentation around the umbilicus (Kullen's sign), of lateral walls of the abdomen (Turner's sign), – are indications of acute pancreatitis.

Dilated veins of the anterior abdominal wall "caput Medusae" in the umbilical region – are indicative of delayed portal blood flow. The dilated veins in down-lateral regions of the abdomen indicate to a delay of outflow in the system of vena cava inferior.

Palpation

We carry out a light superficial palpation to determine the presence of muscular tension of the anterior abdominal wall and localization of a pain. This manipulation is done by application of the fingers with light pressure to the surface of the abdomen.

Muscular tension (defense musculaire) – is the result of the reflex of the inflamed peritoneum, the main sign of peritonitis. It is determined by the intensity of muscular resistance. Muscular tonus must be checked on the symmetric parts of the right and left half of the anterior abdominal wall.

Due to intensity of a strain we distinguish: an insignificant rigidity, significant strain, strict ("board-like") strain. It can be defined during palpation or in a state of rest, it can be localized or diffused.

With the help of palpation we establish the most painful place, which indicates localization of the inflammatory process and the place of the greatest irritation of the peritoneum. The Shchotkin-Blumberg symptom is based on it. It is determined in such a way: the doctor presses the anterior abdominal wall slowly, smoothly, and then quickly takes his fingers away. If the peritoneum is irritated in this part, at the second stage of procedure, the pain is acutely strengthening (positive sign of Shchotkin-Blumberg). It indicates the presence of the inflammatory process (irritation of the peritoneum) of different localization in the abdominal cavity. Voskresensky's sign is based on the same principle – the appearance of a severe pain in the dextral inguinal region on fast slipping moving by the palm along the anterior abdominal wall through a shirt in direction from the dextral hypochondrium to the dextral inguinal region (sign of acute appendicitis).

Local pain can be examined by the following method: moderate percussion with the bent finger of different parts of the abdominal cavity (Mendel's sign).

After a superficial palpation a deep one palpation is carried out (according to Obraztsov-Strazhesko's method). Palpation of the internal

organs, as a rule, is done in time with respiratory motions. By its help zones of the severest painfulness are determined (according to localization of the organs of the abdominal cavity) and its pathological condition (the presence of tumors, invaginations, distended loops, inflammatory tumors, their volume, mobility, consistence, surface, place of localization, etc).

On determining localization of tumor-like formations such methods is used: on strain of the anterior abdominal wall a tumor, which comes from it, does not disappear. The tumor of the abdominal cavity or retroperitoneal space disappears (it is not palpated).

During palpation the doctor specifies the presence of some specific signs concerning certain deceases:

- Ker's symptom - pain during inspiration when palpating the right hypochondria (acute cholecystitis);
- Murphy's sign - impossibility of a deep inspiration due to an acute pain under the physician's thumb of the left hand, when he presses on the edge of the costal arch in the place of projection of the gall bladder (acute cholecystitis);
- Mussi - Georgievsky's sign (phrenic symptom) - pain at pressing on the neck in a projection of passing of the diafragmal nerve in an interspace between the both sternocleidomastoid muscles (acute deceases of the biliary ducts and subdiafragmal spaces);
- Rovsing's symptom, - strengthening of a pain in the right inguinal region when doing jerky movements in the left inguinal region (acute appendicitis);
- Obrastsov's sign, psoas symptom - strengthening of pain on palpation of the right inguinal region, when the patient raises his right leg, straightened in knee joint (acute appendicitis);
- Pasternatsky's sign - intensifying of a pain when striking the lumbar region lower of the XII rib with short blows by a lateral surface of the palm (in deceases of the urinary system and inflammation of the retroperitoneal space);
- Kulenkampf's sign - painfulness of Douglas' space in accumulation of the peritoneal ecsudate. Palpation is made through the rectum (peritonitis);

- Mayo-Robson's sign – pain in the region of left costal-vertebral angle (acute pancreatitis).

On palpation it is also possible to determine zones of the skin hyperesthesia of the anterior abdominal wall (according to the disease)

- Zacharyin-Hed's zones.

Percussion

There are such types of percussion sounds:

- Normal tympanites;
- High tympanites – inflated loops, concentration of gas in the intestines (meteorism), accumulation of gas in the abdominal cavity (pneumoperitoneum);
- Dull percussion sound – concentration of feces, significant muscular tension of the anterior abdominal wall;
- Absolute dullness (femoral sound) – the presence of fluid (ascites, peritoneal fluid, the blood, etc.).

On percussion by pitch of a sound the physician can determine the borders of the organs of the abdominal cavity, the presence, sizes of pathological formations in the abdominal cavity.

Special signs: Spizharny's sign – decrease of volume, or absence of liver dullness on the account of presence of free gas under the dextral dome of the diaphragm (perforation of hollow organ);

- Narrowing of Traube's space – in the presence of fluid in the left pleural cavity (exudates, the blood), in tumors of organs of the left hypochondrium, the large liver, and the lien;
- Wahl's symptom – high tympanites above a circumscribed fixed meteorism, on determining by palpation a dilated loop of the intestine (obstruction of a loop of the intestine).

In order to find the presence of fluid (localized, free) in the abdominal cavity a relative percussion of both halves of the abdomen should be carried out in direction from its middle to the lateral parts. Then we have to do percussion of the abdominal cavity, changing the pose of the patient (on the right and left side, rarely – in knee-elbow and erect position). The change of percussion sound (tympanites instead of dullness) indicates the presence of free fluid in the abdominal cavity, its shift.

Percussion zone of dullness (limited) above the pubes is indicative of the overfull urinary bladder, the increased uterus and ovarian cysts.

With the help of percussion we can determine zone of painfulness (region of irritation of the peritoneum), which corresponds to localization of the inflammatory process. For example, pain during percussion in the region of the gall bladder (Ortner – Grekov's symptom) indicates the presence of acute cholecystitis.

Auscultation

Auscultation helps to determine the state of intestinal sounds, the presence of arterial vascular hum and to establish organ's size, its functional condition, etc.

In norm the intestinal murmurs occur in certain periods of time as the muffled sound. It can be intensified continual, with high or metal tone (mechanical ileus). Sometimes we can hear the falling drop sound (Spasokukotsky's sign). In paralytic ileus, at the terminal stage of peritonitis – peristalsis cannot be auscultated ("dead silence" sign). In the last case respiratory sounds and cardiac activity sounds are auscultated.

Sometimes we may auscultate a friction sound of the peritoneum in the region of the liver, liens (perihepatitis, pericholecystitis, perisplenitis).

With the help of short jerky movements with the fingers in the region of the stomach, on an empty stomach, it is possible to determine a splashing sound of the stomach (stenosis of an exit from the stomach, its atony), a splashing sound of the intestines (Sklarov's sign) in intestinal obstruction.

Special procedures (signs)

Digital examination of the rectum – helps to determine tone of a sphincter, condition of the mucous membrane (mobility, infiltration, tumors, defects); the presence and character of its contents (feces, slime, the blood etc.); balloon-like dilation of the empty ampula of the rectum (Obuhov hospital's sign) in acute intestinal obstruction; painfulness at pressing the wall of the rectum – syndrome of irritation of the peritoneum in acute inflammatory processes of the abdominal cavity or organs of the small pelvis; a diverticulum or impending of the wall of the rectum in accumulation of fluid in the cavity of the small pelvis (inflammatory exudates, the blood) in peritonitis or intra-abdominal bleeding.

Sitkovsky's symptom – is intensifying of a pain in the dextral inguinal region in position of the patient on the left side (acute appendicitis).

Finsterer's sign – is stopping of a pain in epigastrium and increase of peristaltic sounds (in acute gastric-intestinal bleeding)

Voskresensky's sign – is the absence of a pulsation of the ventral aorta in clinic of acute pancreatitis.

Special methods of examination

Determine:

- shock index – relation of a pulse rate to systolic arterial pressure, normally it is – 0,5;
- electrocardiogram (EKG);
- laboratory tests: general blood test, general urine test, basic biochemical indexes of the blood, blood group, Rh factor;
- X-ray examination: roentgenoscopy, if necessary – roentgenography of the thoracic and abdominal cavities.

Accents: mobility of the diaphragm, state of sinuses, the presence of free gas under the diaphragm (sickle's sign) or accumulation of it in the intestines (increases intestinal pneumatization, galaxy's symptom, cockade's sign, arcade's symptom, the presence of levels of fluid in the intestines (Cloiberg's cups), darkening – the presence of fluid (exudates, the blood).

- urographia (stones in the kidneys, the ureters, etc.).
- use of intragastric introduction of water-soluble contrasts, air or oxygen on suspicion of perforation of the stomach and the duodenum.
- contrast examination of the colon (irrigoscopy, irrigography) on suspicion of ileus of the colon.
- ultrasonic examination.
- laparocentesis with using of a searching catheter for determining of the abdominal cavity exudates: its presence and character (enzymes, hydrochloric acid, bile, pus, etc), the blood, air.
- puncture of Douglas' space – determining of character of its contents.
- laparoscopy – visual inspection of a status of the abdominal cavity and its organs.

- differential-diagnostic methods, which provide the exception of the states imitating artificial acute abdomen.
- in cases of indistinct pathology and in the presence of peritonitis diagnostic laparotomy is recommended.

PROCEDURE OF EXAMINATION OF THE PATIENTS WITH HERNIA OF THE ANTERIOR ABDOMINAL WALL (inguinal, femoral, umbilical, white line, postoperative)

The complaints

The patient complains of a pain at physical exertion, fast walking, locomotions, and change of barometric pressure. At first the pain is insignificant, and from time to time it intensifies and interferes at physical exertion.

The presence of tumor-like formation in places characteristic of defect of the anterior abdominal wall. The formation gradually increases in size. In an anamnesis it is necessary to determine the causes of diverticulum's appearance (formation), its duration, course (ability of reduction of hernia, episodes of incarceration, the presence of dysuric phenomena, disorders of evacuation from bowel, etc). To find out whether the patient had previous operations.

Examination

Inspection of the local status is done in vertical and horizontal positions of the patient. It is necessary to strip the abdomen and the upper third of the femurs.

Examination in a vertical position enables to determine insignificant asymmetry in the regions with suspicions of hernia (the inguinal region, above and under inguinal ligaments, the region of the umbilicus, of white line, and postoperative suture). In the presence of hernia the doctor determines its size, direction, place of localization in a state of rest and on strain. In a slanting direction of a diverticulum along the course of the inguinal canal an indirect inguinal hernia is determined. In its descending into the scrotum – there is an inguino-scrotal hernia, in a ball-shaped diverticulum in the region of external foramen of the inguinal canal – a direct inguinal hernia, in the region of the umbilicus – the umbilical one, in the region of postoperative scar – a postoperative hernia may be determined, etc.

In a horizontal position of the patient define reduction of hernial contents, and also state of the local tissues are determined. In small hernias their contents are easily reduced into the abdominal cavity, in a horizontal position the attributes of a hernia may be invisible. The skin in the region of a diverticulum is of usual appearance. In advanced hernias the skin becomes thin, stretched, with the regions of cicatricial changes, and sometimes with the distended veins.

In cough, strain a hernial diverticulum's emerges is visible. It disappears after stopping actions, which cause high intra-abdominal pressure. In the big hernias their contents can be in the hernial sac, the latter may increase during every cough impulse. From time to time it is possible to observe through the thinned skin intestinal peristalsis.

Percussion

As a rule, above the hernial formation on percussion we can hear tympanites. In the presence of the intestine with gas in the lumen in the hernial sac – high tympanites can be heard. In the presence of the omentum or other spongy organ inside the hernial sac – a dull sound is heard.

Palpation

It is necessary to palpate the hernial region in vertical and horizontal positions. Palpation is done with the help of the index finger, and in large defects – by several fingers. On palpation we determine:

- the character of the hernial contents and walls of the hernial sac: sensation of a resilient – elastic consistence is provided by a loop of the intestine, the lobular constitution of a soft consistence has the omentum, sensation of fluctuation – fluid, the fluctuate resilient – elastic formation of the spherical form, which does not change its volume on palpation – a cyst (in women a cyst of round ligament of the uterus), the resilient – elastic formation, during palpation of which the patient has impulse to urination (the wall of the urinary bladder is in the elements of the hernial sac). Condition of the funiculus spermaticus, its elements, the presence of non-malignant tumors, results of chronic inflammation, trauma are also determined;
- the possibility of reduction of the contents of the hernial sac into the abdominal cavity: complete – if it is reduces independently, with the help of the patient or a doctor (free hernia);

- partial – if a volume of the hernial contents is decreased, but its part has remained in the lumen of the hernial sac (irreducible hernia); impossible reduction – if in a state of rest and absence of any strain the hernial contents cannot be reduced to the abdominal cavity (incarcerated hernia);
- state of hernial ring. The inspections are done after complete or partial reduction of hernia. The doctor determines size of the foramen (in centimeters), its form, direction, and condition of the tissues of the hernial ring. On palpation it is necessary to pay attention to a combination of the subjective status and character of a hernial diverticulum; the elastic and painless diverticulum is the main sign of free hernia, painful and tense – of irreducible or incarcerated one.

On palpation the presence or absence of cough impulse symptom in the region of hernial defect is determined.

Special procedures

Reduction of the hernial contents is done by the patient or the doctor. For this purpose the scrotum is moved upward in direction to the external foramen of the inguinal canal. The hernial content around are moved by the fingers in direction to the hernial ring.

Examination of the external foramen of the inguinal canal. Manipulation is done only after reduction of the hernial contents. The scrotum wall at the side of a hernial diverticulum is invaginated by the index finger in direction to the pubic bone. To the middle of and above the pubic tubercle the external foramen of the inguinal canal is determined, where the doctor evaluates its state and state of the funiculus spermaticus (in men), and round ligament of the uterus (in women). In norm the fingertip passes through the external inguinal ring. The presence or absence of cough impulse symptom is determined; both of the inguinal canals must be examined.

Determining cough impulse sign. After complete or partial reduction of the hernial contents with the index finger (with the fingers), we reach the hernial ring (defect of the anterior abdominal wall). The patient is asked to cough, to strain the anterior abdominal wall or to lift up his head. We can feel the pressure of the hernial contents or transfer of sensation of hypertension in the abdominal cavity (cough impulse symptom) with the finger.

Determining of location of a hernial diverticulum according to the pubic tubercle – is a valuable diagnostic procedure. The inspections are made by the index finger. In a femoral hernia a diverticulum is lower and outside of the tubercle. In inguinal hernia it is higher and medially situated (Cooper's sign).

Determining of hernia's relation to an inguinal ligament. An inguinal hernia – is higher than the ligament, a femoral one is under it.

Special examinations

In large hernias for definition of the contents of the hernial sac, and also the state of the hernial wall (sliding hernia) X-ray examination of a gastrointestinal tract (peroral contrast study of the small intestine and the colon or irrigoscopy) and the urinary bladder (cystography) should be done.

Special laboratory, roentgenological, ultrasonic and other additional instrumental methods of examination are necessary for evaluation of the patient's general condition.

IV. SCHEME OF THE CASE HISTORY OF THE SURGICAL PATIENT

Ternopil State Medical Academy
named after I.Y.Horbachevsky

Department of General Surgery

The head of the chair: prof. M.A. Lyapis
Teacher:

MEDICAL CARD № _____ of the inpatient:

Surname, first name, patronymic _____

Clinical diagnosis of a primary disease _____

Complication of a primary disease _____

Diagnosis of an concomitant disease _____

An attending doctor: third year student _____

Beginning of treatment _____ (date)

Completion of treatment _____ (date)

Mark: _____

Teacher's signature: _____

Ternopil 20____

Passport Data

1. Surname, first name, patronymic _____
2. Age _____
3. Sex _____
4. Nationality _____
5. Education _____
6. Profession _____
7. Place of work _____
8. Home address _____
9. Family status _____
10. Date of admission to a hospital _____
11. Date of discharge _____
12. Admission diagnosis _____
13. Basic diagnosis: _____
Clinical diagnosis of a primary disease _____
Complication of a primary disease _____
Diagnosis of an concomitant disease _____
14. Diagnosis on discharge _____
15. Result of treatment _____

1. COMPLAINTS of the PATIENT (QUERELLAE AEGROTI)

First of all it is necessary to count the complaints, concerning the disease with, which the patient has been hospitalized to a surgical clinic. It is necessary to detail every complaint. After that the secondary complaints, which are caused by other reasons are taken into account.

2. ANAMNESIS of a DISEASE (Anamnesis morbi)

In anamnesis it is necessary to write down the development and course of a given disease in a chronological sequence; to pay attention

to the basic stages of its development, appearance of new symptoms, methods of diagnostics and treatment which were used before the patient's admission to a hospital.

3. ANAMNESIS of LIFE (*Anamnesis vitae*)

This part of a medical card has a biographic character, which deals with different aspects of the patient's life. It is necessary to start it from the moment of the patient's birth, taking into account the material conditions during his life, conditions of working, family status, health of the wife (husband), children, conditions of family life, mode of life. Time of puberty: in the female gynecologic anamnesis is (time of appearance of menstruations, their course, cyclicity, amount of pregnancies, labors, abortions). The previous diseases (in particular a tuberculosis, Botkin's disease, lues), operations (under which anesthesia they were carried out), use of hormones, serums, albuminous preparations, hemotransfusions, immunodepressants in the treatment, complications during their application. Drug intolerance (due to which drugs), the presence of other kinds of allergies. It is necessary to find a possible connection of a disease with heredity of the patient (diseases of his parents and relatives, the cause of their death), harmful habits (smoking, abuse of alcohol, narcotics, etc.). You must find a possible connection between the received data and the cause of disease.

4. GENERAL ANAMNESIS (*Anamnesis communis*)

The respiratory system. Respiration through the nose natural, labored, impossible the patient (breathes through the mouth). Whether there is the sensation of dryness in the nose.

Excretions from the nose: amount (small, moderate, large), character (thick, liquid, diaphanous, purulent, sanguinolent, with an odor).

Nose – bleeds (the cause of their occurrence, duration, quantity of the blood).

The larynx. Pain during conversation. A voice – sonorous, quiet, hoarse, aphonia.

Pain in the region of the thorax: absent, constant, arises periodically; strengthens during motions, respiration, cough; it can be of acute, dull, colic, shooting character, etc.

Dyspnea (labored breathing): constant, during physical exertion, going upwards, walking; pronounced it and duration.

Cough: if there is any, insignificant, whooping, strong, constant, and attack-like.

Sputum: the quantity, whether it depends on the time of excretion and a position of the body of the patient; character (slimy, purulent, slimy-purulent), an odor.

Hemoptysis (expectoration of the blood): time of appearance, intensity (bleeding, blood-stained sputum), the color of the blood (red, dark).

The cardiovascular system. Heartbeating – attacks, constant; its dependence on excitement, physical exertion, a position of the body. Irregularity. A feeling of pulsation in different parts of the body.

Pain in the region of the heart, behind the breastbone – their irradiation, force, duration, dependence on locomotions, physical exertion, excitement.

Edemas (localization, regularity of their appearance).

Organs of digestion. Appetite – good, satisfactory, bad, hyperorexia (bulimia). Disgust to this or that food.

Taste – absent, unpleasant (bitter, acidic, "metal").

Dryness in the mouth, thirst, hypersalivation. The quantity of drunk liquid during 24 hours.

Chewing of food, the presence of a pain during it, tiredness.

Swallowing of solid and liquid foods (meals), causal pass of it into the trachea.

Passage of solid and liquid food along the esophagus (free, labored, impossible, painful).

Dispeptic phenomena. Belching (regurgitation) its frequency, the cause and time of occurrence; character (by air, taken food, stomachic contents); taste (bitter, sweet, acidic); an odor (inodorous, of rotten eggs, fecal).

Heartburn, nausea (intensity, for how long (duration), after which food).

Vomiting – without a cause, on an empty stomach, after a meal, what food causes it? In what period of time does it occur? Vomiting matters (eaten food). The quantity of the vomits, taste (of taken before food, acidic, bitter), an odor (inodorous, of rotten eggs, fecal), color (yellow, bloody, dark-brown), the vomiting of fecal matter (in the presence of gastrocolic fistulas).

Pain in the abdomen, its localization (the epigastric, the right and left sub costal regions, in the region of the umbilicus; the iliac, inguinal regions; along the course of the small intestine, colon; above the pubis).

Irradiation of a pain – into the thorax, the back, loins, etc. Its character – constant, colic, sudden, arises gradually, acute, cutting, shooting, "knife-like", etc. Connected with taking of food, what kind of food, at which, through what time after that? Depends on a position of the body. Agents that alleviate (relieve pain). Night pains.

Passage of flatus – is free, in an excessive amount, retentioned.

Defecation (easy (normal), daily, some times per day; with the help of an enema or purgative drugs), influence of food.

Excrements: formed, solid, liquid, "sheep" feces. Color: usual, clay, dark, coal-tar-like (melena), feces with admixtures of the blood (on a surface, inside), slime (in a small, large quantity), purulent discharges.

Ineffectual impulses: tenesmus and imperative impulses, fecal incontinence. A pain in the region of anal orifice during defecation. Prolapse of the nodes, the mucous membrane, and the rectum.

The urinary system. Pain in the region of the loins – constant, sudden: its duration and intensity, when it strengthens, its irradiation (to the back, iliac regions, femur, external genitals). Pain above the pubis, its character and reasons factors, which cause, strengthen and reduce it.

Urination – effortless, labored, painless, painful (at the beginning of urination, during urination, at the end of it), at night, involuntary urination, constant drop-like excretion of the urine in men, character of the urinary stream.

Pain in the region of the testicles, its appearance, intensity, irradiation. In women – pain in the region of the external genital organs, excretions from the vagina.

Locomotorium. Pain in muscles, "intermittent claudication". Pain in the joints, bones, column (in a state of rest, in the afternoon, at night, at locomotions). A muscular force, weakening – whether for a long time?

The nervous system and sense organs. Kinds of character: calm, balanced, and irritable. Memory can be: good, weakened, and lost. Dream: deep, quiet (calm), alarming. Sleeplessness (insomnia).

Sight, hearing, smell, touch (changes, for how long, decrease, loss).

5. OBJECTIVE EXAMINATION (*Status praesens objectivus*)

The patient's status at the moment of examination

The general condition of the patient: good, satisfactory, moderate severe, difficult, extremely serious, an agony.

Consciousness: clear, mental confusion, clouding of consciousness, without consciousness.

Positions: active, passive, forced.

Expression of the face: usual, mask-like face (Parkinson's face), whether it expresses suffering, boredom, fright, anger, excitement, mixedematous, the Basedow's face, Hippocratic face, etc.

Saddle nose. Gorner's sign.

Constitution of the body: normosthenic, asthenic, hypersthenic.

Body height, weight.

Body temperature.

Examination of the patient by systems

The skin. Its color: pale-pink, pale, cyanotic, earthy, yellowish, yellow, bronze). The presence of seams, their localization and the size; the presence of eruption, tumors, hemorrhages.

Hair integument: developed according to the "male, a female type", hypertrichosis. Moisture of the skin: usual, increased (in what places). The skin is dry. The skin elasticity. Nails (appearance, color, elasticity).

The mucous membranes of the mouth and eyelids (color, pigmentation, reddening, eruption, ulcers, leukoplakia). A state of the gingiva (gums): color, density, hemorrhages. The tongue – wet, dry, very dry; swollen, thickly coated with white, grey, earthy layer; its color – pink, crimson, varnish-like; the presence of fissures, ulcers. The teeth – the dental formula. The tonsils – size, color, edema. Fauces. The high palate. An odor from the mouth: absent, purulent, smells like urine, acetone).

Hypodermic basis: thickness of the subcutaneous fat (the skin fold on the level of the V-VI ribs along the back axillary line), character of its localization. The presence of edemas, their localization.

The mammary glands. Symmetry, their dimensions, form, a state of the skin. The papilla and peripapillary circle. In a vertical and horizontal position of the patient on palpation of the mammary glands

the doctor determines the development of a cellular tissue, character of glandular lobes, the presence of consolidations and tumors, their dimensions, localization on quadrants, mobility, adnation with the surrounding tissues, painfulness. Excretions from the papilla (serous, hemorrhagic, slimy, etc).

Lymph nodes: submental, submaxillary, along the course of the sternocleidomastoid muscle, supraclavicular and subclavial, axillaries, along the external edge of the mammary gland, ulnar, inguinal, femoral. Their size, solidity, adnation with each other with the surrounding tissues, mobility, painfulness.

Muscles. General development: (good, satisfactory, unsatisfactory), tonus: (usual, reduced, increased). The presence of painfulness, consolidations, tumors, atrophies, hypertrophies – may be determined on palpation.

The thyroid gland. Size: is (0, I, II, III, IV, V degree). The form of enlargement: (diffuse, nodal, mixed). Its consistence, surface, painfulness on palpation, shift during swallowing, adnation with the surrounding tissues. The thyroid gland's borders. The presence of sounds on auscultation. Grefe's, Mebius, Shtelvag's, Ellinek's, Dalrymple's signs.

Bones. Symmetry of the bones of the limbs, the form of the skull, the presence of deformations of the column, the thorax (kyphosis, lordosis, scoliosis), of the pelvis, of the bones of the extremities (defects of the development due to trauma). Painfulness on palpation, percussion and loading on an axis.

Joints. Changes of configuration: (thickening, edema, the presence of diverticulums, fluctuation). Mobility active, and passive: (usual, limited, excessive). Pain at locomotions, on palpation. Sensation of crunch in the joints at passive locomotions.

Organs of the respiratory system. The form of the thorax: are (conic, barrel-shaped, cylindrical, funnel-shaped, etc.). A position of the scapulae: (if they adjoin to the thorax). Type of respiration: (thoracic, abdominal, mixed).

Participation of both halves of the thorax in the act of respiration. A respiratory rhythm, frequency per 1 minute, depth. Cheyne-Stokes, Kussmaul, Biot's respiration.

State of the intercostal spaces during deep respiration: (retraction, a diverticulum).

Palpation of the thorax (painful places, an edema, consolidation).
Voice trembling: (not changed, weakened, strengthened).

Comparative percussion. A sound: (pulmonary, wooden (box), dull, tympanic). Height of localization of the pulmonary apexes above the clavicle in the front and relatively to the spinous process of the VII cervical spondyle at the back (Krenig's fields). The inferior border of the lungs along the lines at both sides. Mobility of the pulmonary edge (along what line?).

Comparative auscultation. Respiration: vesicular, bronchial, amphoric, mixed, etc. Rales: are dry or wet, their localization. A pleural friction sound, its character.

Organs of the circulatory system. To determine a pulse comparatively at two sides the arteries: the radial, temporal, carotid, humeral, femoral, popliteal, posterior tibial arteries, the dorsal arteries of the foot. Characteristics of pulse: (rate per 1 minute, rhythm, intensity). Characteristic of the arterial trunks (density of the walls, the presence of the dilatings, a visible pulsation).

The arterial pressure (maximal (systolic), minimal (diastolic), pulse). The presence of the varicose distended veins on the thorax, forward abdominal wall, extremities. The degree of distension. Trojanov-Tredeleburg's, Delbe Pertes', Mayo – Pratt's signs.

Examination of the region of the heart. The presence of a diverticulum in the region of the heart. The apex beat, its force, localization.

On palpation of the region of the heart the place of the apex beat and its force (not strengthened, strengthened, shaking, rising) should be also determined.

Pulsation in the epigastric region (the heart, aorta, liver), in the jugular fossa (the aorta, carotid arteries, veins).

By percussion the borders of relative and absolute cardiac dullness (the right, upper and left) are determined.

Auscultation. Cardiac sounds (clear, dull, stressed, splitting, doubling, dropping – out). Cardiac murmurs, their attitude to a phase of the cardiac activity (systolic, diastolic, presystolic). Their force (sharp, weak), duration (long, short). Change of the character of murmur in a postural change of the body. A friction murmur of the pericardium.

Functional tests: orthostatic, with physical exertion, retention of respiration (Stange's test).

The gastrointestinal tract. The form of the abdomen (spherical, oval, retracted, even distended, diverticulums of separate regions, the "frog" belly). Visible peristalsis. Participation of the anterior abdominal wall in the act of respiration, a pain during respiration or cough.

Superficial comparative palpation. Muscle's protection (defense musculaire), partial on palpation, whether constant ("board-like abdomen"), painfulness, the presence of Shchotkin- Blumberg symptom.

State of the umbilical, inguinal, and femoral rings. Divarication of the rectus muscles (diastasis recti), cough impulse symptom. Penetrating, methodical, sliding palpation according to V.P.Obraztsov, M.O.Strazhesko method.

The sigmoid colon: its localization, form, consistence, mobility, painfulness, and murmur.

The caecum, the same data. Vermiform appendix.

The ascending, descending transverse colon (dimensions, painfulness, mobility, consistence, and murmur. The presence of tumors.

The stomach (ventriculus). Its inferior border determined (by palpation, percussion, percussion-auscultative, splashing sound sign). Painfulness (circumscribed, unlimited), visible peristalsis on palpation.

The liver. Peculiarities of the liver margin: (acute, blunt, rounded, solid, soft, tuberos, even). Its borders: the upper is determined by percussion, the inferior – by palpation.

The gallbladder – whether it is palpable. Painfulness in Ker's point. The gallbladder – is palpated, is localized, its size, mobility, consistence, painfulness.

The pancreas (painfulness, the presence of infiltrate, cyst, tumor).

The lien. Its size, borders, consistence (soft, dense), its surface (even, tuberos), painfulness. Determining of its borders by percussion.

Determining the presence of fluid in the abdominal cavity on percussion. On percussion – we can determine dullness in the presence of tumors, fluids; tympanitis – in the presence free gas in the abdominal cavity, in distended loops of the intestines.

Auscultation helps to determine the presence of the intestinal murmurs (sounds) (amount, localization, intensity), colonic, small intestinal.

The rectum and anus. The presence of the external hemorrhoid nodes, prolapse of the mucous membrane, condylomas, fistulas, fissures are seen on examination. Digital palpation (tone of a sphincter, the presence of the thrombosed hemorrhoid nodes, infiltrate, tumors, accumulation of feces).

The urinary system. The kidneys: size, localization, mobility, surface (even, tuberous), painfulness. Pasternatsky's sign.

Palpation of the urinary bladder. Digital palpation of the prostatic gland through a rectum, its size, consistence, the presence of consolidations, fluctuation.

The nervous system. Pupillary, corneal, knee, Achilles tendon, cremasteric reflexes, muscular rigidity of the back of the head, Kernig's sign.

Sensitivity to a pain, tactile, temperature sensitiveness. Hypoesthesia, hyperesthesia. Paresis, paralysis, hyperkinesia.

Dermographism (red, white, when does it appear and disappear?).

6. LOCATION of DISEASE (*Locus morbi*)

Carrying out detailed inspection of the place of the main surgical disease it is necessary to adhere to the same sequence, as during examination of the patient taking into account anatomical localization (the locomotorium, endocrine system, etc.); the examination, palpation, percussion, auscultation. If necessary special methods of examination can be used.

7. INITIAL DIAGNOSIS (*Diagnosis prueliminaris*)

Making of initial diagnosis is based on the main data of the patient's complaints, determining of anamnesis and objective inspection, at this stage 2-3 diagnoses may be made. Except for it, it is necessary to specify the character of disease (acute, chronic, recurrent).

In order to specify a diagnosis it is necessary to generalize typical attributes of the disease.

Example. On the basis of:

- Complaints of the patient (of a peculiar, constant pain, the presence of tumor-like formations in the region of the right mammary gland, elevation of body temperature up to 38°C, rigor, general weakness);

- The data of the case history (is ill during one week, sudden onset, since appearance of painful consolidation in the region of the right mammary gland, elevation of body temperature up to 38°C;
- Self – treatment of the patient: use of analgesics, aspirin, doing massage of the mamma, applying of hot compresses);
- The data of anamnesis of life (three weeks ago she gave birth to a healthy, mature infant, the period of pregnancy was complicated by anemia, labor was complicated by bleeding);
- The data of objective inspection (temperature – 38,6°C, the presence of sharply painful infiltrate 10×8 cm of dimensions in the region of the upper – lateral quadrant of the right mammary gland, the skin in the region of consolidation is hyperemic, edematous, adhesion with the surrounding tissues. The retracted nipple, a fissure 0,7×0,3 cm dimensions in the center, coated with fibrinopurulent layers. By palpation – is fluctuation determined in the center of infiltrate.

It is possible to make an initial diagnosis – of acute suppurative right-hand lactational mastitis.

8. PLAN of EXAMINATION

Making an initial (previous) diagnosis the doctor should prove the correctness of his conclusions by use of modern methods of diagnostics, from common to complex.

It is necessary to begin examination of every patient from the obligatory program, which includes:

1. General blood test.
2. General test of the urine.
3. Examination of feces for eggs of intestinal parasites.
4. Analysis of the urine for sugar (in the quantity of the urine, excreted per 24 hours).
5. Blood test for sugar.
6. Wassermann's test.
7. Photoroentgenography (fluorography).
8. Blood group and rhesus – distinguishing.

Special methods of examination should be prescribed taking into account the initial (previous) diagnosis by way of direct examination

of the organ or system, or diagnosis by exclusion (diagnostic search). A student must show all his knowledge concerning the question, not being limited to the methods, which were given (stated) in the hospital medical card.

9. X-RAY EXAMINATION

Multi-axial roentgenoscopy of the chest, X-ray of the chest in two standard projections, roentgenography of the heart in two slanting positions, roentgenokymography, bronchography, pneumomediastinography, tomography, diagnostic pneumothorax, pneumopericardiography, esophagography, contrast study of the gastrointestinal tract, parietography, retrograde contrast study of colon (the irrigoscopy), pneumoperitoneum, retropneumoperitoneum, cholecystocholangiography, urography (general, excretory), cystography, phlebography, aortography, lymphography, fistulography.

10. INSTRUMENTAL EXAMINATION

Catheterization of the bladder, urethras, cystoscopy, chromocystoscopy, bronchoscopy, esophagogastroscopy, abdominal paracentesis, laparoscopy (peritoneoscopy), bronchoscopy, thoracoscopy, rectoromanscopy, fibro colonoscopy, endoscopic biopsy and others.

11. APPARATUS INSPECTION

Ultrasonic examination of the thyroid gland, heart, liver and biliary ducts, the kidneys, uterus and adnexa uteri, computer tomography, nuclear-magnetic-resonance and others.

12. LABORATORY RESEARCHES

It is necessary to have general notions concerning the purposes of clinical, biochemical, and bacteriological, serologic, pathomorphologic and isotope laboratories. You should remember, that laboratory analyses should be accompanied by clinical thinking (intellection), as results of laboratory tests do not provide exact, ready diagnosis. Finally, while prescribing analyses it is necessary to take into account not only their diagnostic value. Laboratory tests – are methods of examination of the vital organs and systems in a surgical clinic, when the determined data are necessary for correction of the disorders, which occur in patients in the preoperative period, during operation, and at the post-operative stage.

13. FUNCTIONAL EXAMINATIONS

There are: electrocardiography, phonocardiography, ballistocardiography, cardiac catheterization, measuring of central venous pressure by Valdman's apparatus, examination of external respiration, broncho-spirometry, capillaroscopy, encephalography, rheovasography, plethysmography, determining of the regional blood flow, volume of the circulatory blood and others.

*Note. Data of a special examination of the given patient are to be written down after the plan of examination with obligatory interpreting of norm and pathology in the corresponding sequence. To show their diagnostic value concerning the disease, which is studied.

14. CLINICAL DIAGNOSIS (DIAGNOSIS CLINICA)

The clinical diagnosis should be described distinctly, shortly and convincingly, on the basis of synthesis of the received data (on the basis of the previous diagnosis and ...), including additional methods of examination. The concomitant diseases and complication, which were revealed in the given patient should be mentioned and described here.

15. ETIOLOGY and the PATHOGENESIS of DETERMINED DISEASE

Modern concepts about etiology and pathogenesis are briefly mentioned. It is necessary to show connection of the views, which exist concerning etiology and pathogenesis of the given patient. What data confirm or object the standard notions about the determined disease.

16. TREATMENT

To show modern methods of treatment concerning the given disease:

- a) Conservative treatment (specific, pathogenetic, symptomatic);
- b) Surgical (indications, a preparation for an operation, choice of the method of anesthesia, the description of the operation, the characteristic of macro-preparation).

It is necessary to describe the general principles of treatment of the given pathology, and then to detail all the methods concerning the given patient.

17. The DAIRY

Date	Course of a disease	Prescription (treatment of the given patient)
	<ol style="list-style-type: none"> 1. General state of the patient, dream, appetite. The state of the cardiovascular, respiratory systems and organs of the gastroenteric tract. Physiologic evacuation. 2. A dressing: state of a bandage, quantity and character of the discharges from a wound. State of the wound (the presence of the necrotic tissues, granulations, etc.). The procedures, that were done during dressing: inserting or getting out of the drainages, tampons with antiseptic preparations, hypertonic salt solution, ointment and others. 3. Transfusion of the blood and plasma substitutes. 	<ol style="list-style-type: none"> 1. Regimen of exercise. 2. Dietary regimen. 3. Prescriptions of medicinal preparations (give some prescriptions). 4. Physiotherapeutic procedures. <p>Additional examinations, etc. (on the day of examination).</p>

The signature of the attending doctor

18. GRAPHIC REPRESENTATION of the TEMPERATURE CURVE, PULSE, ARTERIAL PRESSURE (enclosed on a separate sheet)

19. PROPHYLAXIS of DISEASES

20. PROGNOSIS CONCERNING:

- life (prognosis quo ad vitam);
- health (prognosis quo ad valitudinem);
- working capacities (ability to work) (prognosis quo ad laborem);

The record should be written in brief (favorable, unfavorable, doubtful).

21. The CONDUCT, the REGIMEN, and DIET, WHICH are RECOMMENDED to the PATIENT on DISCHARGE FROM a HOSPITAL

22. EPICRISIS (*Epicrisis*)

The patient's surname, name, patronymic, his age. Time and cause of hospitalization. A diagnosis. Data of the objective examination, which helped to make a diagnosis. Special methods of examinations. The course course of disease. Treatment (conservative, operative). Date and type of the operation. Anesthesia. The postoperative diagnosis. Pathohistologic conclusion. The course of the postoperative period , complications. Healing of the postoperative wound. Advices for further treatment in a place of residence, life and work.

Dispensary observation.

Prognosis, prophylaxis.

23. REFERENCES

24. DATE; SIGNATURE of the ATTENDING DOCTOR

V. ENUMERATION OF NORMAL VALUES OF THE BASIC LABORATORY UNITS

General blood test

Index	Norm
Erythrocytes	Men: $4,0 - 5,0 \times 10^{12}/l$, Women: $3,9 - 4,7 \times 10^{12}/l$
Hemoglobin (Hb)	Men 135 – 180 g/l, Women: 120 – 140 g/l
Color index (CI)	0,85 – 1,15
Reticulocytes	2 – 10%
Thrombocytes	$180,0 - 320,0 \times 10^9/l$
Leucocytes	$4,0 - 9,0 \times 10^9/l$
Basophils	$0 - 0,065 \times 10^9/l$ (0-1%)
Eosinophils	$0,02 - 0,30 \times 10^9/l$ (0,5-5,0%)
Band neutrophils	$0,04 - 0,30 \times 10^9/l$ (1-6%)
Segmented neutrophils	$2,0 - 5,50 \times 10^9/l$ (47-72%)
Monocytes	$0,09 - 0,60 \times 10^9/l$ (3-11%)
Lymphocytes	$1,2 - 3,0 \times 10^9/l$ (19-37%)
Erythrocyte sedimentation rate (ESR)	Men: 2 – 10 mm/h, Women: 2 – 15 mm/h
Hematocrit (Hct)	Men: 40 – 48%, Women: 36 – 42%

Biochemical blood test

Total blood protein (TP)	65 – 85 g/l
Serum albumins (SA)	35 – 50 g/l (52-65%)
Serum globulins (SG)	23 – 35 g/l (35-48%)
Albumen-globulin ratio	1,2 – 2,0
Immunoglobulins:	
Ig D	0 – 0,15 g/l
Ig G	50 – 112,5 μ Mol/l
Ig M	0,6 – 2,5 μ Mol/l
Ig A	5,6 – 28,1 μ Mol/l
Ig E	0,3 – 30 nMol/l

Total blood bilirubin (TB)	8,5 – 20,5 μ Mol/l
Free (indirect, non-conjugated) bilirubin	1,7 – 17,11 μ Mol/l
Combined (direct, conjugated) bilirubin	0,85 – 5,1 μ Mol/l

Blood lipids (the general contents)	5 – 7 g/l
Serum triglycerides	0,59 – 1,77 mMol/l
Total cholesterol	2,97 – 8,79 mMol/l
Lipoproteins:	
Very low density (pre beta lipoproteins)	1,5 – 2,0 g/l (0,63-0,69 mMol/l)
Low density (beta lipoproteins)	3 – 4,5 g/l (3,06-3,14 mMol/l)
High-density (alpha – lipoproteins)	1,25 – 6,5 g/l (1,13-1,15 mMol/l)
Chylomicrons	0,05 g/l (0-0,1 mMol/l)

Blood glucose	3,3 – 5,5 mMol/l
Glycosylled hemoglobin	4 – 7 %

Blood serum iron	8,53 – 28,06 μMol/l
Serum potassium	3,8 – 5,2 mMol/l
Serum sodium	138 – 217 mMol/l
Serum calcium	0,75 – 2,5 mMol/l
Serum magnesium	0,78 – 0,91 mMol/l
Serum phosphorus (inorganic)	0,646 – 1,292 mMol/l
Blood chlorides	97 – 108 mMol/l

Blood urea nitrogen (not albuminous)	14,28 – 25 mMol/l
Serum urea	3,33 – 8,32 mMol/l
Blood creatinine	53 – 106,1 μMol/l
Creatine	Men: 15,25 – 45,75 μMol/l; Women: 45,75 – 76,25 μMol/l
Blood uric acid	Men: 0,12 – 0,38 μMol/l; Women: 0,12 – 0,46 μMol/l

Lactate dehydrogenase (LDG)	< 7 mMol/(hour/l)
Aldolase	0,2 – 1,2 mMol/(hour/l)
Blood alpha amylase (diastase)	12 – 32 g/(hour/l)
Aspartate aminotransferase (AST)	0,1 – 0,45 mMol/(hour/l)
Alanine aminotrasferase (ALT)	0,1 – 0,68 mMol/(hour/l)
Cholinesterase	160 – 340 mMol/(hour/l)
Alkaline phosphatase	0,5-1,3 μMol/(hour/l)
Creatine kinase	0,152 – 0,305 mMol/(hour/l)
Serum creatine phosphokinase	Up to 1,2 mMol
Lipase	0,4 – 30 mMol/(hour/l)

Coagulogram

Prothrombin index	80 – 100 %
Time of serum recalcification	60 – 120 sec.
Thrombotest	IV – V degree
Fibrinogen	5,9 – 11,7 μ Mol/l
Fibrinogen B	Negative
Fibrinolytic activity	183 – 263 minutes.
Serum tolerance to heparin	3 – 6 (7-11) minutes.
Coagulation time of blood by Li-Uait	5 – 10 minutes.
Bleeding duration by Djuk	Up to 4 minutes.
Retraction of blood clot	44 – 65 % (retraction index 0,3-0,5)

Indexes of an acid-base balance

pH, the arterial blood	7,4
pH, the venous blood	7,35
Strain of carbon dioxide, pCO ₂ :	
Arterial blood	40 mm Hg.
Venous blood	46 mm Hg.
Strain of oxygen, pO ₂ , the arterial blood	75 – 105 mm Hg.
Surplus (deficiency) of bases	\pm 2,3 mMol/l
The general buffer bases of blood	45 – 50 mMol/l
Standard bicarbonate (B):	
Arterial blood	24 mMol/l
Venous blood	26 mMol/l
Original bicarbonate	27 mMol/l

Other blood units

Serum hydrocortisone	230 – 750 nMol/l
Serum parathyroid hormone	42,6 \pm 9,31 pMol/l
Somatotrophic hormone	0 – 118 pMol/l
Thyroid-stimulating hormone, serum or plasma	128 \pm 28 nMol/l
Thyroxine (T4), Serum	65 – 155 nMol/l
Triiodothyronine (T3), Serum	1,77 – 2,43 nMol/l
Ferritin, Serum	Men: 96 \pm 7,63 μ g/l; Women: 45,5 \pm 4,58 μ g/l

A1 – seromucoid	12,47 – 31,75 $\mu\text{Mol/l}$
Thymol (turbidity) test	Up to 5 Units
Sialine test	550 – 790 mg/l
C – reactive protein (C-RP)	Negative
Antistreptolysin-O (ASL-O)	250 Units
Antistreptohyaluronidase (ASH)	250 Units
Osmolarity, Serum	275 – 295 mosMol/kg

Urine units

Relative density of the urine	1,016 – 1,022
Formed elements of the urine:	
According to Nechiporenko	
Leucocytes	Up to $4 \times 10^6/\text{l}$
Erythrocytes	Up to $1 \times 10^6/\text{l}$
Protein, general	45,0 – 75,0 mg/per 24 hours
Potassium	38 – 77 mMol/per 24 hours
Calcium	2,5 – 7,5 mMol/per 24 hours
Creatinine clearance	Men: 97 – 137 ml/minute. Women: 88 – 128 ml/minute.
Uric acid	1,48 – 4,43 $\mu\text{Mol/l}$
Sodium	Changes depending on a diet
Oxalates	90 – 445 $\mu\text{Mol/l}$
Chlorides	4,1 – 13,7 $\mu\text{Mol/per 24 hours}$
17-ketosteroids	Men: 27,7 – 79,7 $\mu\text{Mol/per 24 hours}$; Women: 17,4 – 55 $\mu\text{Mol/per 24 hours}$
17-oxycorticosteroids	0,11 – 0,77 $\mu\text{Mol/per 24 hours}$
Urinary alpha-amylase (diastase)	28 - 160 g (hour/l)
Urinary creatinine	Men: 6,8 – 17,6 mMol/per 24 hours; Women: 7,1 – 15,9 mMol/per 24 hours
Urinary sediment examination according to Kakovsky-Addis	
Leucocytes	Up to $2 \times 10^6/\text{per 24 hours}$
Erythrocytes	Up to $1 \times 10^6/\text{per 24 hours}$
Cylinders	Up to $2 \times 10^4/\text{per 24 hours}$

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Manual
Edited by prof. M.A.Lyapis
**METHODS OF EXAMINATION OF
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The questions of pro-paedeutics of surgical diseases studied at the General Surgery Department are reflected in this manual.

A special attention is paid to the methods and procedures of clinical examination of a patient in the surgical clinic. It also contains the methods of examination of patients with hernia of the abdominal wall, acute abdomen and purulent-inflammatory processes.

This manual is intended for the students of higher medical institutions of the III-IV degrees of accreditation.

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