Ministry of Health of Ukraine
Kharkiv National Medical University

GENERAL INSPECTION OF THE PATIENTS. DIAGNOSTIC SIGNIFICANCE OF SYMPTOMS REVEALED DURING PATIENT INSPECTION.

Methodical instructions for students

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GENERAL INSPECTION OF THE PATIENTS. DIAGNOSTIC SIGNIFICANCE OF SYMPTOMS REVEALED DURING PATIENT INSPECTION.

Examination plan:

1. General patient's condition: consciousness, posture of the patients, gait;
2. Habitus: body-build, height and body weight;
3. Facial expression;
4. examination of the skin: color, eruption, turgor and elasticity of the skin;
5. Edema;
6. Subcutaneous fat;
7. examination of lymph nodes;
8. examination of muscles, spine, bones and joints.

General patient's condition may be good, satisfactory, moderate grave, grave, extremely grave. The criteria's of patient's condition are the following clinical features: consciousness, posture, gait, the facial expression, weight, and mental condition.

Good patient's condition is characterized by clear consciousness, active posture, free gait, sensible facial expression, sufficient weight, and good mood. This condition occurs in patients with remission of chronic disease favorable course of a disease, or during recovery.

Satisfactory patient's condition (*status morboacili*) is characterized by clear consciousness, active or active with restriction posture, free or partial deranged (specific) gait, sensible facial expression, and adequate mental reaction. This condition occurs in patients with remission of prolong chronic disease, or during recovery from acute disease.

Moderate condition (*status ingravescens*) is characterized by deranged consciousness, alteration of facial expression and posture (forced), uncertain gait, partial deranged mental state and may be observed in patients with recurrence of chronic disease, acute diseases, or due to the traumas and poisoning.

Severe condition (*status morbogravi*) is characterized by disorders of practically all clinical features: deranged consciousness, changed facial expression (fear, suffer, hopelessness, indifference). The patients have forced or passive posture, loss of weight, edema, and inadequate mental state. Grave condition is observed in patients with infections and oncological diseases, heart failure, disorders of renal, liver functions, abnormalities of nervous and endocrine systems, after operations, traumas.

Extremely severe condition (*status gravissimus*) is characterized by unconsciousness, passive posture, and indifferent facial expression and observes in the patient with coma, shock, and agony.

Consciousness (*sensorium*) may be clear or deranged. The criteria's of consciousness condition are the following features: orientation to the surroundings, adequate answers, concentrated attention, reflexes, and pupil reaction on light.

Clear consciousness (*sensorium lucidum*) is characterized by adequate behavior, correct orientation to the surroundings, timely answer to the question, and preservation of all reflexes.

The deranged consciousness develops due to the different causes: disorders of cerebral or cardiac circulation; endogenic and exogenic intoxication; infectious affections; hormonal, mineral, metabolic abnormalities; and traumas of the brain.

The deranged consciousness is divided into two groups depressed (stupor, sopor, coma) and excited consciousness (irritative disorder, delirium).

stupor, sopor, coma

The forms of exited consciousness

Twilight state is characterized by disorientation in surroundings, loss of memory (amnesia), patient is exited, has pathologically high spirits, is anxious, sometimes even aggressive. This state may observe in patients with epilepsy.

Delirium is characterized with visual and acoustic hallucinations, inadequacy of emotions, anxiety, intermittent thinking. There are some kinds of delirium: alcoholic (delirium tremens), infection senile, traumatic, pharmacogenic, epileptic.

Posture of the patients may be active, active with restriction, passive, and forced. Active posture with restriction may observe in patients, which suffer with pain due to the affection of joints. The patients feel pain during walking that can limit their activity. Forced posture differs relevant to the process, which cause specific patients position.

Standing upright position is observed in the patient with attacks of angina pectoris (sudden and severe pain in the retrosternal region) feeling of fear, absence of air. The patients have to stop, after rest the pain disappears.
Standing upright position is observed also in patients with atheromatous peripheral vascular disease. The commonest presenting symptom is intermittent claudication – a discomfort or pain in the calves or buttocks, which comes on with walking and makes patient stop. The unpleasant feeling disappears with rest. This stopping may repeat every 100-200 m of walking at the onset of disease.

Sitting position - orthopnea (Gk *orthos* – straight, *pnoe* – breath) – the severe stage of short breath: circulatory insufficiency, attacks of bronchial

asthma, cardiac asthma; narrowing bronchitis due to inspiration of the foreign body, tumor bronchitis, spasm of bronchi; decreased breath surface in patients with pneumonia, lung tumor, pneumothorax, effusive pleurisy. This position improves the patient's state; due to decreased volume of circulating blood dyspnea becomes less expressed.

- Sitting position fixing the shoulder girdle is characteristic of bronchial asthma attack. This position assists the accessory muscles and diaphragm to take part in respiration, thus promotes chest widening during inspiration and improves patient's condition.
- Sitting position with legs hanging down from the bed is due to the acute left ventricular heart failure - cardiac asthma. The patient's condition improved according to the distribution circulating blood from the lesser circulation to the low limbs, decreasing blood pressure in the pulmonary artery, increasing cerebral circulation.
- Sitting position and inclines forward may observe in the patient with pericarditis, which produce a pericardiac effusion resulted restriction a diastolic heart function.

The supine posture is characteristic of strong pain in the abdomen – acute appendicitis, acute cholecystitis, and perforated ulcer of stomach or duodenum. The supine posture with complete immobility is observed in patients with acute rheumatic polyarthritis due to the severe pain; patients with scleroderma and patients with severe fatigue.

The position lying on the side with head thrown back and the thighs and legs flexed on the abdomen is characteristic of cerebrospinal meningitis due to the rigidity and contraction of the muscles at the neck and trunk of varying degree. The back is usually slightly arched and there is a board-like abdominal wall.

Opistotonus is characteristic of paralytic rabies. The patient has forced supine position, under extreme stimuli occurs tetanic cramp of long back muscle and back is arched with 2-3 points touching with bed: back of the head, pelvis and heel. This position may observe in meningitis, epilepsy, some poisoning.

The position "lying with raising of head end of the bed" is characteristic patients with chronic heart failure.

The prone position (lying with face down) is characteristic of patients with tumor of pancreas, gastric ulcer (in the posterior wall of the stomach is affected), acute thrombosis of lien vein, trauma and tuberculosis of spine, trophic ulcer, placed on the skin of back and buttock.

The forced posture on the side:

- on the affected side lie the patients with the lung, pleura diseases. The patients with dry pleurisy prefer to lie on the affected side because the limitation of the pleural layers movement relieves the pain. The patients with pneumonia, massive lung tumor, effusive pleurisy prefers to lie on the affected side for decreasing dyspnea resulted decline pressure and hyperventilation of healthy lung;
- on the healthy side often lie the patients with fractured ribs, intercostal neuralgia, herpes zoster, because pain intensifies if the affected side is pressed against bed.

The forced "knee-elbow position" with bend trunk forward may observe in patients with effusive pericarditis.

The state of restless, anxiety, occur in the patient due to the urinary tract calculi and nephrocalcinosis. When a stone becomes impacted in the ureter, an attack of renal colic develops. The patient suddenly aware of pain in the loin, which soon radiate rounds the flank to the groin in the sensory distribution of the first lumbar nerve. The pain steadily increases in intensity to reach a maximum in a few minutes. The patient is restless, and generally tries unsuccessfully to obtain relief by changing position and by pacing the room. There is pallor, and often vomiting.

Gait – combination of the pose and movement during walking. Gait depends from the state of nervous system connective tissue, muscles, joint and bones. Gait of the healthy person is firm, free, and straight. There are some specific gaits according to the pathological processes:

- spastic gait is characterized by small step with difficulties during bend of limb in knee and hell clinging due to the a pyramidal tract lesion;
- paretic gait is characterized by slow movement with difficulties walking due to the development of flexor spasm and contractures in the limbs resulted from the tumors, trauma and other forms of spinal compression, degeneration of the cord in severe cases the patient loss of ability to walk and becomes immobility. Another clinical signs of spinal compression: the loss of sensation disorders of urination and stools;
- hemiplegic/circumductive gait is characterized by abundance (superfluous) leg draw aside and the arm from the same side bond to the trunk due to the increased muscle tone resulted from central hemiparesis;
- doll's/puppet gait is observed in patients with Parkinsonism, which includes three main components: tremor, muscular rigidity and hypokinesis. Tremor may affect the legs, mouth, and tongue, head. Many patients have difficulty in initiating rapid fine movement, and

slowness of gait and difficulty with tasks such as fastening buttons or writing. Rigidity of muscular tone causes stiffness and flexed posture;

- peroneal gait, stoppage is characterized by high climb of leg, sharp drawing; it due to the muscular atony in patients with damage of femur nerve;
- cerebellar gait, wobbly/tottering/reeling gait is characterized by incoordination of ipsilateral limbs: decomposition of movements, impaired alternating movements; loss of balance: broad based gait, leaning towards of lesion; hypotonia of limbs; head tremor and may observe in patients with damage of cerebellum, alcohol abuse;
- ataxic gait – (origin from Greek ataktos – confused) is characterized by high rising of climb, reach the floor, limb continue to search fulcrum. This gait is due the discoordination resulted from affection of sensory system components (posterior column of spinal cord and peripheral nerves). Ataxic gait is observed in patients with polyneuritis, hereditary ataxia's, neurosyphilis;
- gait as "a duck" – is characterized by small, slow step with compensatory inclination trunk to the opposite side due to the hypotonia of pelvis muscle in patients with myopathy, a dislocation of femur, aseptic necrosis of femur, osteomyolitis;
- gait with forced movements femur nerve fibula neuritis is observed in patients with child central paralysis;
- retarded gait is characterized by small snuffle step with uncertain and uncoordinative movement of arms due to the pronounced cerebral atherosclerosis;
- "proud" gait is characterized by putting trunk backward for support balance relevant to pregnancy, ascitis, or great tumor of abdominal cavity.

Habitus. The concept of habitus includes the body-build, height and body weight. In addition to general inspection it is necessary, to perform some anthropometry measurement.

Height. The main anthropometric signs are the man's height and weight, which depend on the ethic factors. The normal height of males varies from 165 to 180 cm, females 155-170 cm. Deviations on either side are connected with endocrine dysfunction. Patients height and the length of his trunk are important for the assessment of both his physical grow and proportions of his separate parts, which can be upset in some congenital diseases and disease acquired in childhood.

Weight is measured on a special medical balance weight should be done in the morning. Whenever possible the patient should be with no clothing. In

order to follow changes the patient's weight repeated weightings should be done in the same conditions. *Body Mass Index* (BMI) was proposed in order to assess the weight in adults. BMI may calculate using formula:

$$\text{BMI} = \frac{weight\,(kg)}{height\,(m^2)}$$

Gain of weight may be in persons without weight control, having eating habits with increased intake of carbohydrates, saturated fat and alcohol. Endocrine disorders are potential contributors to obesity (Cushing's syndrome, hypofunction of thyroid gland, hyperfunction of thyroid gland, diabetes mellitus I type). The BMI values are independent of age and sex. BMI, however, may not correspond to the same degree of adiposity between populations, in part because of different body proportions.

Loss of weight is observed in persons during starvation, in patients with grave diseases, oncology pathology, endocrine dysfunction.

Body-build is determined by morphological bodily features and divided into two groups:

a) *correct habitus* with a well proportioned make up of the part of the body: trunk, head, limbs without deformity;

b) *incorrect habitus* with different deformity and disproportion of the trunk, limbs, chest, and abdomen.

Face of the patient.

Face in patients with diseases of respiratory system:

- *facies pneumonica* – one-sided blush on the same cheek as affected lung, cyanosis, often herpes on the lips and nose;
- *facies tuberculous* – exhausted, pale face with blush localized on the cheeks, "burning eyes", dry lips, excited countenance, half open mouth;
- *facies asthmatica* – pale, cyanotic face, sweating, cool extremities, an unproductive cough, accelerated breathing rate;
- *facies adenoidea* – half open or full open mouth, loose-hanging lower lip, noisy breathing.

Face in patients with disease of cardiovascular system:

- *facies aortale* - pale skin, rhythmical movements of the head, simultaneously with aortic regurgitation (Musset's symptom);
- *facies mitrale* – the patient looks younger his age, face with blush, localized on the cheeks, cyanotic color of the tip nose, ears, dyspnea. The face is observed in patients with mitral stenosis;

- *facies Corvisara*, facies cardiaca – is characteristic of heart failure. The face is edematous, pale, and yellowish with a cyanotic hue. The mouth is always half open, the lips are cyanotic, the yeas are dull;
- *facies plethorica* – hyperemic and cyanotic skin, puffy face due to the excessive circulated blood in patients, plethora with hypertensive crises.

Face in patients with endocrine disorders:

- *facies acromegalica* – due to the hyperproduction of growth hormone by anterior lobe of hypophysis. The disease is characterized by disproportional growth of all bones, soft tissues, and internal organs. There are enlarged superciliary arches, zygomatic bones, ears, auricles nose, lips, tongue, growth and putting forward of low jaw (prognotism). The head is elongated, and the facial features appear generally coarsened. The hand wrists, feet, heel bones also enlarge;
- *facies in patients with Cushing's syndrome* due to the increased excessive cortisone production in patients with adrenal tumor or prolonged glucocorticoid administration is characterized by round or "moon-like" face, plethora, red cheeks. Excessive hair growth may be present in the mustache and sideburn areas and on the chin (hirsutism in women). The additional clinical obesity, diabetes and increased bruisability;
- *facies myxoedemica* in patient with severe hypothyroidism (myxedema) due to the thyroid hypofunction has a dull, puffy face, with purplish lips and malar flush. The edema often particularly pronounced around the eyes does not pit with pressure. The hair and eyebrows are dry, coarse, the hair is thinned or absent on the outward portions of the eyebrows. The face is pallor due to the vasoconstriction and anemia. The presence of a blush on a pale face resembles the appearance of a doll. The patients have often drowsiness and diminished intellect (if the disease begin from childhood);
- *facies basedovica* are observed in patients with hyperthyroidism which results from exposure of the body tissues to excess circulating levels of free thyroid hormones. The face is lively with widened eye slits and abnormally sparkling eyes: the eyes are protruded (exophtalmus). The face looks as if frightened;
- *facies in patients with hypogonadism* is characterized by dry skin, wrinkled, absence of hair in men, thin eyebrows, looks as "baked apple".

Face in patients with diseases of kidney:

- *facies nefritica* – the face is edematous and often pale. Swelling usually appears first around the eyes and in the morning. The eyes may become slit like when edema is pronounced.

Face in patients with diseases of nervous system:

- *facies amimica*, Parkinson's mask in patients with blunts expression. A mask like, amimic face may result, with decreased blanking and a characteristic stare. Since the neck and upper trunk tend to flex forward, the patient seems to peer upward toward the observer. Facial skin becomes oily and drooling may occur. This face is observed in patients with cerebral atherosclerosis;
- *facies myophtica* – with half-open month, without wrangle on the forehead, amimic, halt open eyes is characteristic of progressive myophathy;
- *risus sardonicus* with a resemblance of a grieve occurs in tetanus patients: the mouth widens as in laughter, while the skin folds on the forehead express grief;
- *facies asymmetrica* – asymmetries movements of facial muscles of central or peripheral facial neuritis.

Face in patients with infectious disease:

- *facies fibrilis* is characterized hyperemic skin, sparkling eyes and excited expression;
- *facies* in patients with *louse-borne typhus*: general hyperemia, the sclera is injected ("rabbit eye");
- *facies* in patients with *typhoid fever*: slightly icteric yellow color;
- *facies* in patients with *meningitis*: the countenance of the read, anisocoria (different size of pupils), ptosis;
- *facies* in patients with *cholera* – frequent blinking, changing grimace, disorderly (irregular)mobility of face;
- *facies leontina* with nodular thickening of the skin under the eyes and over the eyebrows, with flattered nose is observed in leprosy;
- *facies* in patients with *parotitis* (mumps) swelling of parotid glands, which are visible above the angles of the jaw. At first it may be unilateral swelling, gradually become bilateral swelling due to the parotid gland enlargement;
- *facies* in patients with *whooping cough*: puffy face with edematous eyelids, conjunctiva hemorrhage, constant tears.

Facies in patients with diseases of blood system:

- *facies anemic* – very pale, with greenish tint in patients with iron deficiency anaemia;

- *facies* as a *"wax-doll":* very pale with yellowish tint and seemingly translucent skin.

  Facies in patients with diseases of digestive system:
- *facies Hyppocratica*: sunken eyes, pinched nose, deadly livid and cyanotic skin, which is sometimes covered with large drops of cold sweat. This face is specific for the collapse due to the grave disease of abdominal organs, accompanied by peritonitis (rupture of gall blander, perforated ulcer of the stomach or duodenum).

Skin. Examination of the skin should be performed using the general inspection and palpation. During the inspection of the skin attention should be paid to the color; eruption of the skin; turgor and elasticity (visual and palpative methods); moisture of the skin (visual and palpative methods); edema; temperature of the skin, subcutaneous veins.

Color of the skin. In healthy person skin has corporeal color (*cutis coloris somatici*), without eruption, moderate moisture and elasticity, preserved turgor. The color of the skin depends of the amount and quality of pigments, the blood circulation, and chemical content of blood and on the thickness of the skin. There are following pathological changes of the skin color: pale, red, cyanotic, yellow, and bronze. The pale and red color of the skin related to the thickness, blood circulation, innervation and may be transient character in physiological condition (fear, high and low temperature of the air). The yellow, cyanotic and bronze color of the skin are due to the changing of the chemical blood content and are observed only in pathological condition except physiological jaundice at newborn.

Pale color of the skin (*cutis pallide*) may be physiological and pathological.

Transient physiological pallid skin pear is due to the vasomotor reaction of central (fear) and peripheral origin (effect of low temperature).

Constant physiological pallid skin is observed in patients with thick skin, insufficient development of subcutaneous vessels.

Pathological pallid skin is connected with amount and quality of blood. The changing quality of blood is observed in patients with decreased number of erythrocytes and/or hemoglobin content in a blood unit volume, classified as anemia, which accompanied such diseases as hemoblastosis, different types of anemia; acute and chronic infections with hemolysis (malaria, sepsis) and chronic toxicity.

The causes of altered amount of blood:

absolute decreasing of blood amount due to the external hemorrhage: (traumas, burns, wounds) and internal hemorrhage: (gastro-intestinal, rupture of spleen, extra-uterine, hemorrhoid, dilated esophageal veins);

relative decreasing of blood amount due to the vascular spasms and accumulation of blood in dilated vessels, narrowing of vessels by renal and cardiac edema; insufficient blood filling of vessels in patients with aortic regurgitation.

In certain forms of anemia the skin is specifically pallid: characteristic yellowish tint occurs in Addison-Biermer anemia, hemolytic anemia; greenish tint - in iron deficiency anemia (chlorosis). Specific earth-like tint occurs in malignant tumor; brown or ash-colored - in malaria; "cafe an lait" (coffee with milk) in infectious endocarditis. Pale, yellow and cyanotic color of the skin is typical to congestive heart failure.

Red color of the skin (*cutis rubra s. erythema*) may be local or diffuse related to the quality of blood, circulation and innervation, thickness of the skin.

Red color of the skin can be of *physiological* origin in persons who are permanently exposed to high temperature; sunshine; with superficial location of skin vessels; excitement.

Pathological red color may be transient in fever. In patient with acute pneumonia the redness is located on checks, more pronounced on the side of the affected lung. *Local erythema* as two-sided blush is characteristic of mitral stenosis ("mitral butterfly" with cyanotic tint), lupus hemoglobin concentration erythematous ("lupus bufferfly") and tuberculosis.

Constant diffuse erythema is observed in polycythemia (erythremia), and explained by excessive production by bone marrow erythroid precursor and consequently the erythrocyte count, hemoglobin concentration increases in peripheral blood.

Cyanosis (*cutis cyanotica*) may be due to the changing the quality of blood – (accumulation of the carbon dioxide and reduced restored hemoglobin) and venous congestion. There are three forms of cyanosis: central or diffuse, peripheral or acrocyanosis and local one.

Central or diffuse cyanosis (*cyanosis diffuse*) may be observed in such pathological states as:

- chronic lung diseases (chronic bronchitis, acute pneumonia, emphysema, pneumosclerosis, bronchial asthma, atelectasis, thromboembolism of the pulmonary artery);
- poisoning of the hemolytic substances;
- congenital heart disease.

Peripheral or acrocyanosis is observed in patients with congestive heart failure. The blue color appears in the lips, cheeks, ear auricles, tip of the nose, and fingers.

Local cyanosis (*cyanosis localis*) is observed in patients with thrombosis of artery or vein.

Yellow skin and mucosa (*cutis icterica, s. icterus*) can be due to increased concentration of bilirubin in the blood (bilirubinemia) and accumulation it in the tissue and skin. Initial and moderate yellow skin is named subicterus, pronounced yellow color defines as jaundice. Physiological, pathological and exogenic jaundice are differentiated.

Physiological jaundice is observed in newborn at first 5-7 days and resulted from hemolysis of excessive erythrocyte amount during transition to external respiration.

Pathological jaundice are divided into three types according to their etiology:

- hemolytic or suprahepatic jaundice (icterus colore citricoluteos icterus suprahepatica) is characterized by lemon-yellow tint due to the excessive hemolysis of erythrocytes in the cells of the reticulohistocytic system (spleen, liver, bone marrow). Hemoglobin brakes down to the globin and haem. Bilirubin is formed from the released haem and accumulate in blood observe in malaria, sepsis, poisoning. The jaundice of hemolytic substances, inherited or acquired hemolytic anemia;
- parenchymatous or hepatic jaundice (icterus colore rubiginoso s. icterus hepatica) is characterized by orange-yellow tint due to the damage of hepatocytes and disorders of their function (inversion of unbound bilirubin to bound), observe in acute and chronic hepatitis, poisoning;
- obstructive or subhepatic jaundice (icterus colore luteoviridi s. icterus infrahepatica) is characterized by greenish-yellow tint due to the accumulation of bilirubin (the product of gradual oxidation of bilirubin) resulted from partial or complete obstruction of the common bile duct in patients with stones in the gall bladder, cancer of the head of the pancreas, cancer of the major duodenal papilla.

Exogenic jaundice or xanthosis related with prolonged using of carotin (carrots), oranges, tangerines and administration of ethacridine lactate (rivanol), picric acid. This jaundice defines as false one and differs from true on some signs. In some cases the skin becomes yellow pallid due to hemorrhage from varicose esophageal or hemorrhoid vein in portal cirrhosis of the liver.

Brown or bronze skin can observe in physiological and pathological condition.

Physiological brown color is of transient character and observes during prolonged exposure of sunshine (gelioxanthosis) and in pregnancy (as a separate brown points).

Pathological brown or bronze color is observed in patients with Addison's disease or bronze disease resulted from the adrenal insufficiency in patients with hypofunction of adrenal gland. There is specific consequence in appearance bronze skin color. First open parts of the body: face, neck, arms - "symptom of gloves", later bronze color appears in the site of excessive pressure, next – all skin, except palms and soils. Pathological brown or bronze color is characteristic of hemochromatosis (bronzed diabetes or pigmentary cirrhosis of the liver). The disease is associated with inherited disorder of iron metabolism, excessive absorption of iron in the intestine and accumulation of hemosiderin in various tissues and organs, in the first instance in the liver and pancreas with development of cirrhosis and symptoms of diabetes.

Local hyperpigmentation (*chloasmus*) of the breast nipples and the areola in women, pigmented patches on the face and the white line on the abdomen are signs of pregnancy.

Grayish ("dirty") color on the open parts of the body (argy ria) due to the administration the silver drug for a long time.

Depigmentation (*depigmintatio*) occurs as a symmetrical white spots on the face, trunk, limbs (*vitiligo*), small white foci after syphilis – leukoderma, complete absence of pigment in the skin – *albinismus*.

Eruption of the skin.

Herpetic lesions (*herpes*) are small vesicles 0,5 to 1 cm in size, filled with transparent fluid and located near the trigeminus nerve (*herpes labialis, nasalis*), intercostal nerve (*herpes intercostalis*), severe pain appears for some day before and during appearance of herpes zoster. Herpetic lesions (*herpes simple*) appear on the chin, forehead cheeks and ears in patients with pneumonia, malaria, influenza, and meningitis.

Hemorrhage lesions are of different forms:

- petechia – small pointed hemorrhages;
- ecchymoses – large black and blue spots, a large extravasation of blood into the skin;
- purpura (hemophurma) – red spots of different size, vary of color from red to yellow-greenish.
- Hematoma – a swelling from gross bleeding.
- The main causes of the hemorrhage lesions:
- trauma with damage of vessel;
- disease of the blood (Werlhoff's disease. Hemophilia, acute leukemia, B12-deficiency anemia);

- disease of liver (obstructive jaundice);
- infections disease, accompanied by capillarotoxicosis;
- deficiency of vitamins C and K.

Roseola is a rash-like eruption of 2-3 mm patches, which disappears when pressed and explained by local dilation of the vessels. Roseola is a characteristic signs of some infections such as typhoid fever, para-typhus, louse-borne typhus and syphilis.

Erythema – large red spot with distinctly outlined margins slightly elevated under skin due to the dilation of the vessel resulted from allergic or inflammatory process. Erythema develops in some persons hypersensitive to strawberries, crabs, and eggs and in patients with erysipelas sepsis, erythema nodosum at rheumatic fever. Sometimes erythema may develop after administration some drugs.

Erythema nodosum – painful, palpable, dusky blue-red nodules are most commonly seen on the shins. Malaise, fever and joint pains are common. The lesions resolve slowly over a month leaving bruise-like marks in their wake. This characteristic reaction is due to a vasculitis in the deep dermis and subcutaneous fat. Erythema nodosum may cause infections, systemic disease, and administration of some drugs.

Weals (*urticaria, nettle rash*) – red round itching lesions elevated under skin, which appear as allergic reaction on some food, chemical substance, drugs.

Teleangioectasia – dark-red spots on the skin and mucosa, the visible dilation of small subcutaneous blood vessels, as a rule on the upper part of the trunk, disappeared after pressing due to the excessive production of estragens in patients with portal liver cirrhosis.

Ulcer (*ulcus*) is damage of the skin and subcutaneous tissue with retarded healing process. According to the etiology there are some groups of ulcer:

- exogenic factors (mechanical, chemical, radiation);
- longstanding administration of glucocorticosteroid drugs – ulcus steroideum;
- disorders of skin trophicity (ulcus trophicum) due to the diabetes mellitus, heart failure, endoarteritis, atherosclerosis of the peripheral arteries, thromboflebitis;
- abnormalities of blood - sickle cell disease, spherocytosis, cryoglobulinemia;
- neuropathy - leprosy, syphilis.

Pustula – a visible accumulation of the pus in the skin.

Abscess – a localized collection of pus in the cavity more than 1 cm in diameter.

Acne vulgaris – lesions, which are limited to the face, shoulders, upper chest and back. Seborrhea (greasy skin) is often present. Acne vulgaris is the chronic inflammation and blocked pilosebaceous follicles and observed in teenagers.

Decubitus – necrosis of the soft tissues due to the ischemia, longstanding mechanical pressure in the in patients with grave diseases.

Scars - the result of healing, in which normal structure are permanently replaced by fibrous tissue. Scars are formed from the connective tissue after inflammatory process and indicate to the previous trauma, burns, operation, infections (tuberculosis, German measles). Scars on the skin of the abdomen and the hips remain after pregnancy (striae gravidarum) due to the over stretching of the skin. Stria – a streak-like, linear, atrophic, pink, purple or white lesions of the skin due to change in the connective tissue. Pink line scars on the abdomen, hips, shoulders are specific for Itsenko-Cushing disease. Stellar scars, tightly connected with under lying tissue are characteristic of syphilitic affections.

Turgor and elasticity of the skin. Turgor of the tissue depends on the blood circulation, innervation and metabolism, development of the subcutaneous tissue. Elasticity means flexibility of the skin. Elasticity and turgor can be determined by pressing a fold of skin on the extensor surface of the arm between the thumb and the forefinger. The fold disappears quickly on normal skin when the pressure is released. In cases with decreased turgor, the fold persists for a long period of time. Diagnostic meaning of the diminished turgor: oncology pathology (cachexia); stenosis of the esophagus or pylorus; endocrine pathology (Addison's disease, Simond's disease); infections with dehydration (cholera, dysentery). Moisture of the skin in normal condition is moderate. Both in physiological and pathological state the skin may be dry or moist.

Edema may be caused by penetration of fluid through the capillary walls and its accumulation in tissues. According to the pathogenic and location factors, edema may by general and local.

General edema associated with disease of the heart, kidneys, and endocrine disorders is characterized by symmetrical localization in some regions of the body or general overspreading of edema throughout the entire body. There are such kinds of general edema:

- Congestive (oedema congestivum) due to the heart failure, resulted from decreased pump myocardial function;
- renal (oedema renalis) due to the decreased oncotic pressure, hypoproteinemia, excessive secretion of aldosterone and increased

reabsorption of water. Renal edema is observed in glomerulonephritis, nephrotic syndrome;

- cachectic (oedema cachecticum) – due to the starvation, cachexia, hypoproteunemia, decreased oncotic pressure in patients with oncology pathology;
- myoedematous (oedema hypothireoidum) is caused by accumulation in the skin and subcutaneous tissue the specific substances, which contents mucopolysaccharide.

Local edema is a result of some local disorders in the blood or lymph circulation; inflammation; allergic process:

- local congestive edema is usually associated with thrombosis of the veins, compression of the veins by tumor or enlarged lymph nodes;
- inflammatory edema (oedema inflammatorium) is observed in erysipelas, rheumatic polyarthritis, rheumatoid arthritis;
- angioneurotive edema (oedema angioneuroticum) Quincke's edema as a result of allergic reaction.

If edema is generalized fluid may accumulate in the body's cavities: in the abdomen (*ascitis*), in pleural cavity (*hydrothorax*), in pericardium (*hydropericardium*). General edema overspread throughout the entire body is named *anasarca*.

Subcutaneous fat depends on the sex, age, character of nutrition, functional condition of endocrine and nervous systems. In order to assess the degrees of subcutaneous fat you should take a fold of the skin and fat over Traube's cavity and measure the thickness. In normosthenic person this size is 1.5-2 cm. The thickness of the skin wrinkle more than 2 cm reflects the excessive accumulation of subcutaneous fat, less than 1.5 cm – deficiency, and less than 0.5 cm is the sign of cachexia. Excessive accumulation of fat in the cells and tissue is defined as *obesity* (adipositas). The main reasons of obesity: overfeeding, hypodynamia, endocrine disorders of pituitary gland, sex glands (adiposogenital obesity), thyroid gland (hypothyroidism), adrenal gland (Cushing's syndrome).

Insufficient accumulation of fat may result from constitutional factor (asthenic type), diseases of digestive system.

Emaciation (macies) is divided into three groups: loss of weight (demetritio), disturbances of weight (dysthrophia) and sharp and excessive loss of weight (cachexia).

Pronounced loss of weight may occur in patients with prolonged intoxication, chronic infections, malignant tumor, some endocrine disorders (hyperthyroidism, diabetes mellitus, Addison's disease, hypophysial cachexia – Simmond's disease.

Lymph nodes may reveal during general inspection and using palpation. Regional lymph nodes include: occipital, auricular, posterior cervical, superior cervical, submandibular, supraclavicular, subclavicular, axillary, cubital, inguinal, popliteal. The examination of lymph nodes is performed by simple inspection and superficial palpation of the symmetrical region following the certain consequence: location, size, consistency, pain, mobility, and color of the skin over the lymph nodes. Normal lymph nodes cannot be detected visually or by palpation. The main causes of the enlargement of the lymph nodes:

- infections (tuberculosis, AIDS, brucellosis, infectious mononucleosis, tularemia, plague;
- inflammation (local or generalized);
- diseases of the blood (leukemia, lymphogranulomatosis);
- lymphatic metastatic spread.

Diagnostic meaning of the pathological lymph nodes:

- inflammatory lymph nodes – different size, soft, elasticity, painful, with smooth surface, movable, reddening of the overlying skin. Cervical lymphadenit occurs in tuberculosis, which characterized by enlargements of lymph nodes with purulent foci with subsequent formation of fistulae and immobile cicatrices;
- the diseases of the blood – systemic symmetrical enlargement of the peripheral lymph nodes and mediastinal, mesenterial ones. The nodes are firm and tender; their surface is rough, mobile, developed lymph nodes conglomerates. The nodes fuse together but do not separate;
- lymphatic metastatic spread – as a rules local enlargement of lymph node, which are hard, rough, palpation is painless;
- Virchov's gland (glandula Virchov's) – metastatic tumor in the supraclavicular lymph nodes, commonly at left in patient with cancer of stomach;

Muscular system. The main methods of examination are inspection and palpation. During examination of the muscular system doctor should assess: the level of development, sex and age correspondence, tenderness, muscular tonus, and evidence of cramps. In normal condition the muscular system develops corresponding to sex and age, the muscular tonus is present, the muscles are painless, cramps and atrophy are absent. Disorders of voluntary muscles include:

- muscular dystrophy;
- metabolic and endocrine myopathy;
- congenital myopathy;
- toxic myopathy;

- disorders of the neuromuscular junction.

Metabolic causes of muscular weakness are hypokaliemia, hyperkaliemia, hypocalcaemia, and hypercalcaemia.

Endocrine causes of muscular weakness are hyperthyroidism, hypothyroidism, Cushing's syndrome, and Addison's disease.

In patients with chronic longstanding diseases (severe infections, intoxication, endocrine and oncology diseases) the generalized atrophy of the muscular system are observed. The atrophy may be revealed: 1) visually, by comparison the symmetrical muscular groups, 2) by antropometry with measurement the circumference of muscle of both extremities, and 3) by palpation with checking up the muscular tonus and strength. The forms of muscular tonus: hypotension, atony, hypertension, and muscular rigidity.

The local atrophy and atony occurs in patients with the disorders of nervous, muscular systems, with the diseases of connective tissues, joint and bones. The hypotonia and atony are observed in patients with progressive myopathy, myasthenia. In patients with Cushing's syndrome the loss of protein in muscle leads to a proximal myopathy (difficult or impossible to get up from a squatting position). Muscle weakness, proximal and bulbar myophaty, periodic paralysis is the clinical features of hyperthyroidism. Muscular occipital rigidity is characteristic sign of meningitis.

Cramps (spasmus) is defined as sharp involuntary spasms of muscles. The clonic and tetany (tonic) cramps are distinguished.

The tetany cramps (*spasmus tonicus*) is characterized by contraction of muscles (from some minutes till some hours and even days). There is an increased excitability of peripheral nerve due either to low serum calcium or to alkalosis. Magnesium depletion should also be considered as a possible contributing factor. Causes of tetany: due to the hypocalcaemia – malabsorption, osteomalacia, hypoparathyroidism, acute pancreatitis, chronic renal failure; due to alkalosis – repeated vomiting, hyperventilation, primary hyperaldosteronism. In children with deficiency of vitamin D is a reduction of ionized plasma calcium and infantile rickets (rachitic) tetany may result with spasm of the hands and feet and of the vocal cords. The cramps are observed in patients with meningitis (tetanus, opistotonus, risus sardonicus), hypoparathyroidism ("obstetrician's hand", accotisher's hand, opistotonus, tetany, trismus, lockjaw, excessive excitability, "fish's mouth").

Tetanus – the most important early symptom is trismus – spasm of the masseter, which causes difficulty in opening the mouth and in masticating, hence the name "lock-jaw". This tonic rigidity spreads to involve the muscles of the- face, neck, and trunk. Contraction of the frontalis and the muscles at the angles of the mouth gives rise to the "risus sardonicus". There is rigidity of the

muscles at the neck and trunk of varying degree. The back is usually slightly arched and there is a board-like abdominal wall.

The clonic cramps (*spasmus clonicus*) is characterized by fine tremor and observes in patients with hyperthyroidism (finger tremor), nervous diseases, and some poisoning.

Paralysis – loss of muscle ability to contraction. The complete paralysis (plegia) and incomplete paralysis (paresis) are distinguished. The reasons of the damages of motor centers in brain and spine, motor nerves due to the stroke, traumas, compression by the tumor. May be paralyses of one half of the body – spastic (central, pyramidal paralysis or hemiplegia), paralysis of upper extremities (upper paraplegia), paralysis of the upper and lower extremities (tetraplegia), paralysis of an extremity (monoplegia).

Bones system. The main methods of examination of bones system are inspection and palpation. The attention should be paid to the development of the skeleton, correspondence to the age and sex, the presence of visible deformities (facture, curvature, enlargement). The palpation is useful for detection of insignificant deformity and tenderness.

Skeletal abnormalities are characterized by short or high stature and abnormal body proportion.

Short stature may be observed in the patient with impaired growth velocity due to the endocrine pathology: isolated growth hormone deficiency, panhypopituitarism (hypophysical dwarfism, hypophysial nanism, hypophysial infantilism), primary hypothyroidism (cretinism), and Cushing's syndrome. There are another conditions for short stature: chromosomal abnormalities (Cherechewski-Turner syndrome), malabsorption (coeliac, Chrohn's disease, colitis), systemic chronic illness (asthma, cardiac, renal disease), malnutrition, and psychosocial deprivation.

High stature is cased by endocrine dysfunction (acromegaly) or chromosomal abnormalities (Marfan's syndrome, Kleinefelter's syndrome). As a rules the short or high stature are accompanied by abnormal body proportion and dysplasia.

Joints system. Examination of the joints is performed in such consequence: symmetrical joints of the upper extremities, symmetrical joints of the low extremities, head, neck and spine. Attention should be paid to their shape, configuration, swelling and hyperemia. Using palpation you should reveal possible pain, fluid in the join cavity, and crackle.

In clinical practice it is important to assess joints movements. Two kinds of movement are distinguished: active movement, which is fulfilled by patient according to the doctor's instruction and passive movement, which perform doctor. Simultaneous restriction active and passive movement suggests the affection of the joints (rheumatoid arthritis, rheumatic polyarthritis). Restriction

of active, but preservation of passive movements is observed in patients with coma and during disorders of local joint circulation and innervation.

Affection of the joints develops due to the inflammatory diseases (tuberculosis, gonorrhea, rheumatic fever, rheumatic arthritis), metabolic disorders of uric acid (gout), and psoriasis.

The *arthritis of rheumatic fever* is often symmetrical, affecting large joints with acute painful inflammation, which characteristically "flits" from joint to joint (a migratory polyarthralgia). The joints affected include those of the limbs, spine, and sometimes temporomandibular and costoclavicular joints.

In the *rheumatoid arthritis* appears the pain on movement of joints, morning stiffness and symmetrical swelling of small joints of the fingers and the toes. Swelling of the proximal, but not the distal interphalageal joints gives the finger a "spindled" appearance. As the disease progresses there is tendency for it to spread to involve the wrists, elbows, shoulders, knees, and ankles. The hip joints become involved only in the more severely affection, but neck pain and stiffness from cervical spine diseases is common. As the disease advances, muscle atrophy, tendon sheath and joints destruction result in limitation of joint motion, subluxation and deformities.

Gonoccocal arthritis damage commonly knee in a form of monoarthritis. Sometimes may be polyarthritis with asymmetrical joint involvement and acute, or subacute emigratory polyarthralgia.

Tuberculosis of the joints is usually secondary to an established focus in the lungs or kidneys. Clinical features include pain, stiffness, swelling and restriction of movement of single large joint associated with anorexia, weight loss and night sweat.

Syphilitic arthritis may be associated with painful paraarticular swelling due to the epiphyseal involvement soon after birth – congenital syphilis. Acquired secondary syphilis may be referred to the migrating polyarthralgia.

Brucellosis is associated with polyarthralgia or transient polyarthritis. Chronic bursitis and osteomyelitis may also observe.

Systemic lupus erythematosus leads to the transient and migratory or a more persistent polyarthritis. Chronic inflammatory arthritis and tendosynovitis may cause deformities and contractures.

Psoriatic arthritis is a secondary inflammatory arthritis found in patients with psoriasis. An inflammatory arthritis affecting the distal interphalangeal joints is the most characteristic form of psoriatic arthropathy and associated with nail changes.

Reiter's disease – is the triad of non-specific urethritis, conjunctivitis and arthritis that follows bacterial dysentery or exposure to sexually transmitted infections. The clinical features include the affection of large or small joints of the lower limbs, sometimes monoarthritis of a knee or an asymmetrical

inflammatory arthritis of some interphalangeal joints. The skin lesions can vary from faint muscles, vesicles and pustules on the hands and feet to marked hyperkeratosis with plague – like lesions spreading to the scalp and trunk. These may be associated with severe nail dystrophy and massive hyperkeratosis.

Examination of the spine. In normal condition there are four physiological curvature of the spine:

- cervical curvature of the spine column with forward convexity – lordosis;
- thoracic backward curvature of the spinal column – kyphosis;
- lumbar forward curvature – lordosis;
- pelvic kyphosis.

the deformity of the spine is observed as pathological *lordosis*, pathological *kyphosis*, lateral curvature of the spinal column – *scoliosis*, and curvature of the spinal column with lateral and backward convexity – *kyphoscoliosis*. The form of spine is defined by constitution, gait, muscles development and depend on environmental factors.

TEST CONTROL

1. Which forced posture of the patient is typical in peritonitis:
   A. Lying with the face up
   B. Lying with the face down
   C. Sitting posture
   D. Knee-elbow posture
   E. On one side
2. Which forced posture of the patient is typical in dry pleurisy:
   A. A. On healthy side
   B. B. On affected side
   C. C. Lying with the face up
   D. D. Lying with the face down
   E. E. Sitting posture
3. Forced posture of the patient on affected side is typical in:
   A. A. Bronchial asthma
   B. B. Peritonitis
   C. C. Ribs fracture
   D. D. Pulmonary abscess
   E. E. Liver cirrhosis
4. The patient is sitting in bed with his hand supporting the edge of the bed, the legs are lowered down. This is typical for:

A. Attack of bronchial asthma
B. Heart failure
C. Gastric ulcer
D. Cholecystitis
E. Appendicitis

5. The patient is sitting in bed thrown back with his legs lowered down. This is typical for:
A. Attack of bronchial asthma
B. Heart failure
C. Angina attack
D. Appendicitis
E. Cholecystitis

6. The patient is in bed with his head thrown back and the legs pressed against the abdomen. This is the sign of:
A. Cranial injury
B. Appendicitis
C. Meningitis
D. Cholecystitis
E. Ulcer disease

7. The patient's position is forced, he is in knee-elbow position. This is the sign of:
A. Bronchial asthma attack
B. Gastric ulcer
C. Attack of renal colic
D. Attack of cardiac asthma
E. Cholecystitis

8. Which face is observed in the patients with heart failure:
A. A. Facies Hippocratica
B. B. Facies Corvisart's
C. C. Facies leontina
D. D. Facies mitrale
E. E. Facies basedovica

9. Which face is observed in the patients with thyrotoxicosis:
A. A. Facies Hippocratica
B. B. Facies Corvisart's
C. C. Facies leontina
D. D. Facies mitrale
E. E. Facies basedovica

10. Which face is observed in the patients with peritonitis:
A. A. Facies Hippocratica
B. B. Facies Corvisar's

C. C. Facies leontina
D. D. Facies mitrale
E. E. Facies basedovica

Answers: 1B, 2B, 3D, 4A, 5B, 6C, 7B, 8B, 9E, 10A.

Methodical instructions

PERCUSSION OF THE HEART

Methodical instructions for students

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