Saint Petersburg State Pediatric Medical University
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Department of Propaedeutics of Internal Diseases

METHODS OF MEDICAL EXAMINATION OF A PATIENT (part II)

Instructions for 3d year medical students

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EXAMINATION OF ABDOMINAL CAVITY ORGANS

Interrogation

Patients with digestive disturbances present the complaints which could be divided into specific and non-specific ones.

Weakness, malaise, feeling jaded, disrupted sleep, irritability, reduced working capacity etc. are considered non-specific complaints.

Specific complaints are: pains in the stomach, disturbances of appetites the syndrome of gastric dyspepsia (belch, heartburn, nausea, vomiting), the syndrome of gastric dyspepsia (abdominal distention . meteorism, diarrhea, constipation), gastro-intestinal bleeding, jaundice of the sclera and skin, dark urine, skin itching.

Abdominal pains are often the main symptom among other sensations of the patients with digestive disorders. In a disorder of the stomach or duodenum pains are localized in the epigastric area. Most frequently they are aching, pressing, cutting and are clearly associated with meals. When pancreas is affected these are principally girdle pains occurring in the upper portions of the abdominal cavity, radiating to the left and right subcostal space (under the ribs) and back. The small intestine involvement is accompanied with pains in the periumbilical area (near the navel), in the area of large intestine and jejunum, in the flanks, not uncommonly radiating to the sacrum region.

It is especially important to find out whether there is any association between the pain and a meal. In particular, the pain appearing 30 minutes after a meal is characteristic of the ulcer of the stomach body In the duodenal ulcer, late pains occur, they appear two hours after a meal and so-called .hungry. and .nocturnal. (night) pains that can be temporarily relieved by eating a small amount of food.

Intestinal troubles produce spastic (colicky), distentional (caused by the abdominal distention with gases), adhesive (due to the commisure between an intestinal loop and a neighbouring organ) and vascular pains (mesenteric thrombosis).

Besides the pain syndrome, patients with a digestive organ pathology quite often suffer from various disorders of appetite. These may manifest as its lack up to the complete loss (anorexia), its excess, sometimes a very sharp one, (bulimia); its perversion which is most commonly shown as either revulsion to some previously favorite food, or as longing to eat something usually not eaten (such as chalk, lime, ground, coal etc). Anorexia, or reduced appetite may be seen in gastritis, ulcers, colitis. Anorexia may quite often be a sign of gastric or pancreatitic cancer or severe pancreatitis. Loss of appetite should not be confused with abstinence from food owing to fear of pain (sitophobia) e.g., in exercerbation of chronic pancreatitis. Increased appetite is frequently found in patients with duodenal ulcer.

Impaired appetite may be associated with many pathologies. They are neuro-psychic diseases (brain tumours, hysteria), endocrine glands disorders (diabetes mellitus, thyrotoxicosis), liver troubles (hepatitis, cirrhosis), blood system disorders (anemia, leucosis), malignant growths, infections, pregnancy.

Belching is sudden backflow of the air collected in the stomach through the mouth (eructatio) or sudden backflow of the air combined with a little amount of food (regurgitatio). Belching with air may be due to either formation of carbon dioxide in the interaction of hydrochloric acid with the bicarbonates discharged by the stomach, or to swallowing some air while eating (aerophagy). The belch smelling with rancid butter (because of the oleogenous or lactic acid) makes evident the presence of fermentation. The belch smelling of rotten eggs is caused by the rotting of the protein food (sulphorated hydrogen formation). Rotten belching on an empty stomach is characteristic of the pylorus stenosis, gastric atonia. Particularly bad smell of the belch results from a fistula forming an opening between the stomach and the colon. Sour belch is found in the increased acid formation by the stomach in patients with duodenal ulcer. The bitter taste of the belch is associated with the outflow of the bile from duodenum to the stomach.

Heartburn (pyrosis) is a specific burning sensation in the epigastric area or behind the breastbone. It develops in gastro-esophageal reflux due to the impaired function of cardial sphincter; it is associated with the irritation of the esophageal mucose with the stomach content. Heartburn is frequently found in ulcers and hernia of the esophageal opening of the diaphragm.

Nausea is a distressing feeling in the epigastric area, in the chest and oral cavity frequently followed by vomiting and accompanied by general exhaustion, pallor of the skin, perspiration, salivation, extremities getting cold , blood pressure decreasing. Nausea depends on the stimulation of the emetic (vomitive) center which is not intense enough to cause vomiting, but which can bring about antiperistaltic movements of the stomach. Nausea often ends in vomiting.

Vomiting (vomitus, emesis) is a complex reflex action caused by the emetic center excitation resulting in the eruption of the stomach contents out through the mouth. With this action a pylorus spasm takes place, there is the stomach peristalsis and the cardiac sphincter opens. The direct cause of vomiting is irritation of the emetic center located in the bottom of the 4th ventricle. This may be due to increased afferent impulsation coming along the sensitive vagus fibers from a number of reflexogenic areas (stomach, gallbladder, biliary and hepatic ducts, pancreas, appendix, ureters and also from pharynx, peritoneum, coronary vessels, uterus, etc.), to pathologic processes in the brain (ischemic or hemorrhagic insult (stroke), brain edema, high intracranial pressure, for example in case of a hypertensive crisis, a brain trauma, etc.), or it may be caused by direct toxic influence on the emetic center (in case of uremia, hepatic failure, diabetic coma, pregnancy etc.). Frequently vomiting is associated with eating in some way.

There are morning vomiting, or vomiting “on an empty stomach”, early vomiting coming soon after having a meal, delayed vomiting developing several hours after eating and nocturnal (night) vomiting. The cause of a bloody vomiting may be a hemorrhage from dilated esophageal varicose veins in patients with liver cirrhosis, from disintegrating malignant tumors, from the cardiac area mucosa rupture in Mallory-Weiss syndrome. If the blood, coming to the stomach in case of gastric or duodenum bulb ulcerous disease, has a contact with hydrochloric acid

that is sufficient to form hydrochloric hematin out of the blood hemoglobin, the vomit mass acquires the color and appearance of .coffee grounds..

In case of bowel dyspepsia patients complain of indigestion, i.e. diarrhea or constipation, sensation of distended abdomen, bowel grumbling and increased gas discharge.

Diarrhea (diarrhoea) is frequented bowel emptying (3 or more times a day), with the excretion of too liquid and sometimes abundant faeces. Diarrhea development depends on the quickened passage of food mass and faeces through the bowels. Often diarrhea is observed in case of acute or chronic bowel infections (enteritis, enterocolitis, dysentery), more rarely in case of exogenous or endogenous intoxications (mercury-poisoning, uremia), in case of endocrine glands dysfunction (thyrotoxicosis), food allergy.

Constipation (obstipatio) is a delayed and troubled or systemically insufficient bowel emptying. Chronic defecation delay for more than 48 hours in most people is considered to be constipation.

Constipation can be divided into organic and functional. The organic constipation is the result of mechanical obstacle for faeces passage through the bowel, i.e. narrowing of the bowel lumen with a tumor, commissure, scar, abnormal large intestine development (megacolon).

Functional constipation may be caused by alimentary factors: eating easily digestible refined food, poor in vegetable cellulose, or by nervous and endocrine regulatory disturbances of bowel motor and evacuation functions.

Abdominal distention is a common complaint in patients with intestinal diseases. This symptom develops as a result of increased gas-production., bowel motor function impairment, decreased gas absorption by the bowel wall, bowel obstruction.

Gas-production increase may develop in case of eating food with high contents of vegetable cellulose (peas, beans, cabbage, etc.) or disbalanced bowel microflora (microorganisms living in the bowels) which may lead to an increased fermentation (dysbacteriosis).

Bowel grumbling sensation is observed in case of acute or chronic inflammatory processes in small bowel (enteritis) and pancreatitis.

Complaints about blood discharge during or after the act of defecation point to bowel hemorrhage (bleeding). The presence of fresh blood in the faeces is a sign of a damage in the lower large intestine (an anal mucosa fissure, hemorrhoids, large intestine cancer, ulcerative colitis). In case of little bleeding from the proximal parts of large intestine the blood in faeces has brown colour. In hemorrhages from the upper parts of the gastro-intestinal canal the tar-like stool (melena) is revealed generally. Such stool colour is due to hydrochloric hematin produced from hemoglobin under the influence of hydrochloric acid and intestinal ferments.

The illness course depends on the particular case and is very variable. Nevertheless, either acute course (“acute abdomen”) or gradual onset with periodic aggravations (chronic disease) is typical for most of them..

Life history is very important for revealing the causes which predispose and provoke gastro-intestinal tract diseases. They are hereditary predisposition, detailed epidemiologic history (acute bowel infections, food poisoning, jaundice), chronic intoxications (nicotine, alcohol, drug addiction), psychoemotional stresses, unhealthy work conditions.

Inspection

Local inspection of the digestive system starts with the inspection of the oral cavity where the condition of the tongue (if it is coated or swollen and its papillae state), the teeth, gums are examined. An even polished tongue with the papillae atrophy is found in chronic atrophic gastritis. The teeth imprints on the tongue are characteristic of hypothyroidism. Teeth and tonsils should be inspected for signs of possible infection.

Inspection of the abdomen is carried out both in the vertical and horizontal position of the patient. Estimating its shape one should keep it in mind that it is determined, to a large extent, by the patient's constitution. Thus an asthenic person has a small abdomen with a narrow epigastric area. In contrast, a hypersthenic usually has a big abdomen proportionally bulging ahead, with the wide epigastric area.

A proportional abdomen enlargement may be seen in obesity, when a big amount of gases is collected in the bowels or there is some fluid in the abdominal cavity. Bulging of a part of the abdomen is associated with an enlarged liver (principally in the right subcostal space), or spleen (in the left subcostal space), with the presence of a big tumour, hernia bulge. An overfilled urine bladder, an ovarian cyst, an enlarged utera may cause bulging of the lower abdomen. A drawn in, boat-shaped abdomen is typical for acute malnutrition, e.g. in cancer cachexia or severe diarrhea. In pyloric stenosis one can reveal transmissive waves of the stormy gastric peristalsis in the epigastric area, whereas in an intestinal obstruction peristalsis waves may be found in the umbilical area.

Inspection of the abdomen allows the doctor to detect a net of anastomoses between the systems of the hepatic vein and vena cavae on the front abdominal wall. Dilated swollen twisted veins located around the navel, radiating from it and forming so-called "Medusa's head", are characteristic of the syndrome of portal hypertension seen in liver cirrhosis.

Palpation

Palpation of the abdomen let us get an information of the abdominal organs localization, their shape, size, consistency and tenderness. Following the rules mentioned below is necessary:

- the doctor must be on the patient's right;
- the doctor's hands should be warm, as the touch of cold hands causes reflectory responsive contraction of the abdominal wall muscles;

- the patient is in the supine position (on the back), with his or her legs stretched and arms put along the trunk;
- the patient.s head should be low, raised head (e.g. supported with a pillow) brings about marked tension of the abdominal wall muscles interfering with palpation;
- the patient should breathe deeply through the open mouth, abdominal muscles should take as big part in respiration as possible as this helps the front abdominal wall to relax.

Superficial Light Touch Palpation

One should start from the superficial light touch palpation. It is done with the right hand which is put on the abdomen flatly, with the symmetric regions of the abdominal wall being palpated by the light fingers pressure. One starts with the left iliac area, passing to the right iliac one and and gradually rising upwards, covering all portions of the abdomen. Another alternative of the superficial palpation is circular palpation. Superficial palpation determines the abdominal wall tension, its tenderness in some region, a severely enlarged liver or spleen, a large tumour.

Normally the palpating hand does not feel any resistance, the abdominal wall is soft and yielding. With a pathology some tension is felt, then they distinguish resistance and muscular tension (defanse musculaire) resulting from the contracted abdominal muscles caused by the viscero-motor reflex.

Resistance is perceived as mild opposition of the abdominal wall, it arises only on palpation and decreases or disappears if the patient's attention is distracted; it is accompanied by mild tenderness. The tenderness is discovered only within the limited regions corresponding to the localization of the organ affected.

The muscular defense is associated with the inflammation of the parietal peritoneum, it is characterized by marked tension of the abdominal wall. It may be local (limited peritonitis) or diffuse when the whole peritoneum is involved (.board-shaped. abdomen), abdominal palpation being severely painful in this case.

Deep Sliding Topographic Methodical Palpation according to V.P.Obrastzov and N.D.Strazshesko

The deep sliding topographic methodical palpation worked out by V.P. Obrastzov and N.D. Strazshesko allows the examiner to determine the localization, size, shape, consistency and displaceability of abdominal organs. The technique suggests the examiner sinking his or her fingers deep inside the abdomen, trying to press the organ examined to the back abdominal wall in order to restrict its mobility and to get a clearer feeling.

Carrying out this palpation the right hand is put flatly on the front abdominal wall, rectangularly to the axis of the examined bowel portion or the organ edge. The patient is asked to breathe deeply. On expiration the examiner's hand is slowly pressed deeply inside the abdominal cavity; with a series of 3 - 5 respiratory

movements the doctor's hand approximates the back wall painlessly for the patient. After that sliding fingers' movements are made across the examined organ. At the moment of sliding one's fingers off the organ one can feel the organ's localization, shape and consistency. To move one's fingers more freely, the abdominal wall skin is previously somewhat displaced opposite to the slide of the fingers.

The deep palpation is carried out in a certain sequence: first the sigmoid colon is palpated, then the caecum (blind intestine), the terminal part of the ileum (twisted intestine), the ascending and descending ones, the large curve of the stomach, the transverse-segmented intestine, the liver, the spleen, the pancreas, the kidneys.

The sigmoid colon is palpated in the left iliac region. To do this four joined, slightly bent right hand fingers are placed in the middle of the interval between the navel and the upper spina of the iliac bone. On the patient's inspiration a skin fold is formed by moving towards the navel. Following this, on the patient's expiration the examiner tries to sink his or her finger tips as deep into the abdomen as possible, moving them closer to the back wall. Then passing the hand from the inside out and from up downwards, the examiner slides down the back abdominal wall rolling over the bowel. It is at this moment that one judges the bowel portion felt by the tactile sensation. In 90-95% of healthy people the sigmoid colon is palpated as a smooth elastic cylinder as thick as a thumb. In a pathology the spasmic colon may be felt to be dense, tender, sometimes beads-like, knobby. It may be swollen and grumbling.

Palpating the cecum (blind bowel) located in the right iliac region one uses the same technique as with the sigmoid one, but the direction of the examiner's hand movement is changed. In 80-85% of healthy people the caecum is palpated as a smooth cylinder widening a little down, 3-5 cm in its diameter, grumbling when pressed. The inflamed caecum gets swollen and tender, the grumbling increases.

To palpate the ascending and descending parts of the segmented bowel the right hand of the examiner is placed in the lateral portion of the abdomen, with the palm's basis near the navel and the fingers outwards. Simultaneously with the patient's breath the examiner's hand is sunk into the abdominal cavity of the patient and slides it medially until coming into contact with the bowel. Normally these portions of the intestine are felt to be elastic painless cylinders.

Examining the transverse-segmented intestine one uses bilateral palpation. The doctor's hands lie on both sides from the straight abdominal muscles at the level of the navel. Gradually they go down into the abdominal cavity. Coming to the back abdominal wall one slides down it, feeling for the bowel with one's fingers. In more than a half of healthy people (60-70%) the normal transverse-segmented intestine is palpated to be a soft cylinder 2-3 mm wide, painless and easily moved up or down.

As the position of the segmented bowel is variable, to be more exact one should find the localization of the lower edge of the stomach (using the auscultative palpation. of Obrastzov described below), and then continue the examination moving downwards by small steps of 2 - 3 cm.

Palpation of the stomach is carried out in the epigastric or mesogastric area. The abdominal skin is displaced upwards, on expiration the examiner's hand is sunk inside the abdominal cavity and moved towards the back abdominal wall. The large gastric curve slips from under the fingers and produces the sensation of a thin soft fold (crease) located on both sides of the median line, 3 - 4 cm above the navel. Feeling for the stomach one discovers the fold below the stomach. The difference between the tympanic sound over the stomach and over the bowels let us determine the lower border of the organ by percussion. Finally, to detect the stomach borders one can employ auscultation. To do this, the stethoscope is placed in the region of the stomach body, then one scratches the front abdominal wall skin with a finger (auscultofriction), in the direction from the stethoscope. The scratching noise is well heard over the stomach or outside its borders; it can diminish abruptly or disappear, which helps to define the organ's contour. Summing up the peculiarities and the sequence of the intestine palpation, the following scheme of palpation is advised:

The steps of palpation are:

I. Establishing the doctor's hands. The right hand is put on the front abdominal wall according to the topography of the organ palpated.

II. Formation of the skin fold. On the patient's inspiration a skin fold is made by the doctor's fingers, slightly bent, with the skin being moved to the direction opposite to the later slide along the intestine (palpation).

III. Sinking the doctor's hand inside the abdomen. On the patient's expiration when the front abdominal wall muscles gradually relax, the doctor tries to sink his finger tips as deep down the abdominal cavity as possible, up to the back wall.

IV. Sliding over the organ (the palpation itself). At the end of an expiration with the right hand sliding, the organ is pressed to the back abdominal wall. At this moment a tactile impression of the specific features of the organ palpated is formed.

Palpation of liver, spleen and kidneys is described in the corresponding sections.

Deep palpation is complicated if some fluid is present in the abdominal cavity. In this case the jabbing ballottement palpation is used. When right hand finger tips jab the front abdominal wallone tries to come in contact with an organ and feel it in this way.

Penetrating palpation is applied to define local points of tenderness. It is done by pressing one finger onto the abdominal wall rectangularly. Most frequently the following points are examined like this: the appendicular point of MacBurney (it is between the lower and middle thirds of the line connecting the navel with the spina of the iliac bone), the cystic point (in the place where the outer edge of the straight abdominal muscle is crossed by the right costal arch) and the pyloroduodenal point (located two fingers thickness right and up from the navel).

Percussion

Percussion has a limited use in the examination of the abdominal organs. It is principally applied to determine the size of liver or spleen - see the corresponding sections.

This method is also used to *reveal the presence of free liquid in the abdominal cavity*. In the patient with ascites in the supine position (on the back) the bowel sound found in the umbilical area is changed into the dull one heard in the lateral portions of the abdomen. To make sure the dullness of the sound is associated with the presence of free liquid, you should change the patient's position. In the vertical position of the patient the area of dullness is displaced to the region above the pubis.

The presence of liquid in the abdomen can be confirmed by the ballottement palpation. The left hand of the examiner is placed on the right abdominal flank, with the right hand producing jabbing (pushing) causing fluctuations of the fluid, controlled with the left hand. To avoid transmission of the fluctuations along the front abdominal wall the patient is asked to put his or her hand on his median abdominal line. If there is no liquid in the abdominal cavity no fluctuations are transmitted.

Auscultation

Application of this method is also limited in the examination of the abdominal cavity. In a healthy person one auscultates periodic intestinal peristalsis in the abdomen. Change in the auscultative picture may be due to the physiological increase in the intestinal peristalsis after having a meal rich in vegetable fiber or due to the pathologic peristalsis increase in the inflamed small intestine of various etiology (enteritis), in an early stage of intestinal obstruction (usually in the limited region above the stenosed intestine). Moderate reduction of the intestinal peristalsis is heard in patients with intestinal atonia (e.g. in elderly people with atonic constipation), whereas sharp reduction of the intestinal peristalsis or even its absence ("grave-sepulchral - silence") is revealed in patients with peritonitis (including the one resulting from an intestinal obstruction).

Some murmurs may be auscultated in the abdominal cavity. They are: vascular ones (the hepatic murmur in the liver cancer, arterial and vascular murmur in the partly occluded aorta or major artery), venous ones (in the increased blood flow along the collaterals in the liver cirrhosis) and friction rib ones (when an organ covered with the peritoneum is inflamed).

Examination of the liver and biliary tract will be discussed in a separate section, which adjustified in our opinion by some peculiarities of the study of the hepatic biliary system.

EXAMINATION OF THE LIVER AND BILIARY SYSTEM.

Interrogation

The following complaints are characteristic of the diseases of the liver and biliary system: pains in the right subcostal space, dyspepsia, jaundice, fever, skin itching, abnormally increased bleeding (hemophilia).

Pains in the right subcostal space may be paroxysmal (come in attacks) in hepatic colic or they may be long dilating (bursting) in hypomotor gallbladder dyskinesia. Pain may radiate into the right shoulder, scapula (shoulder blade), interscapular space, sometimes into the heart area and in female patients it can radiate into the groin. Calculary cholicititis is characterized with periodic pains. An attack of pain may be accompanied by the temperature rise.

Dyspepsic troubles like bitter taste in the mouth, belching and nausea usually appear after having some greasy fried food. Vomiting, distended abdomen, constipation or diarrhea are possible. These complaints are not pathognomonic (characteristic for a particular disease) as they are typical for other digestive tract troubles as well.

Fever of various degrees depends on the activity of the inflammatory process in the liver or biliary tract.

Skin itching is commonly associated with jaundice, but it can be seen without it, too, as itching is caused by the collection of biliary acids in the blood. Normally the acids are discharged with the bile. Skin itching is persistent and bothers patients more at night.

Jaundice of the skin and mucosa is frequently unnoticed by the patient at first. It is often other people around who attract the patient's attention to the jaundice of the sclerae, palms, soles of his or her feet and later to the diffuse jaundice of the patient's skin. Jaundice may result abruptly from an attack of hepatic colic. Occasionally jaundice becomes chronic for months or years, decreasing or increasing from time to time following the course of the disease.

Hemorrhagic diathesis manifested by bleeding of the gums and nose and by hemorrhoids bleeding is characteristic of the liver damage in chronic hepatitis. Bleeding esophageal veins is typical for portal hypertension in cyrrhosis.

Symptoms of the affected nervous system like general inertness, depression, jaded feeling, headache, loss of sleep may develop in diseases of liver and biliary system. In fact, the patients complain of loss of sleep at night and feeling sleepy in the daytime. Advanced hepatic failure brings about delirium, convulsions, hallucinations and coma.

Inspection

Inspection of patients with the diseases of liver and biliary system shows their satisfactory condition and clear mind for a large part of the course of the disease. Severe condition with the disturbance of consciousness develops in hepatic coma.

The constitution type is frequently that of hypersthenic. When a grown up patient has a disease of liver since his or her childhood the inspector can find symptoms of general infantility.

Sufficient light and thoroughness of the inspection are necessary to reveal jaundice. Its degree may vary from the subicteric sclerae (with the bilirubin value over 25 mcmol/litre) to the characteristic jaundice (with the bilirubin value over 35 mcmol/litre). The inspection is started from the conjunctiva of the sclerae and the lower lid, then the mucosa of the mouth is inspected (the soft palate, the lower surface of the tongue and the bridle), the palmar surface of the hands, the soles of the feet and finally the whole skin. The sequence of the inspection repeats the sequence of the jaundice development. Various kinds of jaundice manifest various shades of the colour. Hemolitic (suprehepatic) jaundice gives the skin the yellow lemon colour, the mechanic (subhepatic) jaundice has a greenish shade, the parenchimatous (hepatic) jaundice produces the shaffron tint. As jaundice is often associated with skin itching traces of scratches are seen on the patient's skin.

The presence of vascular asterisks (teleangioectasia) on the skin is considered a pathognomic sign. These are slightly prominent punctate angiomas with branches of fine capillaries, 3 - 5 mm in diameter, diappearing when pressed. The vascular asterisks may be found on the chest, neck, face, back and shoulder girdle.

Other rarer hepatic symptoms are: gynecomastia (breast glands enlargement) in males, hemorrhages or petechial rash on the skin, xanthomatosis (yellowish plaques on the skin of the eyelids), "clubbed" fingers (thickened at the ends like sticks of drums) and also the symptom of raspberry tongue and palm hyperemia (palmar erythema).

Inspection of the abdomen may reveal its enlargement due to the fluid collected there (ascites), with the navel bulged and the venous net located around the navel radiating from it, resembling .Medusa's head. Changes like these accompany portal hypertension.

A patient with mild ascitis has a "pendulous" abdomen in the upright position and a "frog' abdomen" (a flabby flat one) while lying on his orher back.

Percussion

While estimating the liver size percussion is used before palpation. M.G. Kurlov suggested to determine the borders of liver dullness along three lines. The first measurement is performed along the right midclavicular line. In two following measurements the intersection point of a horizontal line tangent to the upper liver dullness border, determined along the right midclavicular line, and the median (middle) body line is considered to be the upper liver dullness point. The lower border in the second measurement is determined along the median line, and in the third measurement obliquely through the left costal arch. In normosthenics these sizes are 9, 8 and 7 sm.

Palpation

Liver palpation is performed bimanually (with both hands). Left hand envelopes the right costal arch, which limits the chest expansion at the time of breathing in and contributes to the liver movement's amplitude increase in the vertical direction. The right palm is placed flatwise on the right iliac area. Fingers, set on the same line and bent a little, are placed at the right angle to the defined liver margin and immersed (sunk) into the abdomen, forming a “peculiar pocket” (by Obraztsov V.P.). On inspiration the liver comes down and slips out of that “pocket” providing an opportunity to reveal the lower margin position, consistency and tenderness. If during the inspiration the examiner’s fixed fingers do not meet the liver margin the examiner should move his or her hand gradually towards the right subcostal area repeating the action till he touches the organ. If possible, one should estimate the liver shape, its surface condition (whether smooth, even or tuberous), consistency (soft or thickened), its tenderness.

The Interpretation of Liver Palpation Results

Changes	Causes
Liver enlargement	1. Hepatitis, cirrhosis, liver cancer 2. Congestive liver" in right ventricular heart failure 3. Blood system diseases (leucosis, anemia, lymphogranulomatosis) 4. Some acute and chronic infectious diseases
Marked liver thickening	1. Liver cancer 2. Liver cirrhosis 3. Chronic hepatitis
Large-tuberous surface of liver or liver margin	1. Liver cancer 2. Liver echinococcosis 3. Syphilitic liver damage
Acute liver tenderness on palpation	1. Marked and rapid liver capsule distention (heart failure, intrahepatic biliary ducts diseases with the embarrassed (obstructed bile outflow from liver) 2. Spread of liver acute inflammatory process onto its serous cover (perihepatitis)

The gallbladder is not palpated normally. The gallbladder palpation should be performed in the same position as the liver one. The gallbladder point (the Kerr's point) is normally localized at the intersection of the horizontal line coming along the lower liver margin (along the midclavicular line) and of the musculus rectus abdominis external edge.

In case of a gallbladder inflammation a number of pathological symptoms are routinely determined. A typical palpation symptom is tenderness at a gallbladder

point when it is touched with the right thumb at the time of the patient's inspiration (the Kerr's symptom).

Tenderness during slight thumping the right subcostal area with the doctor's palm rib (especially at the height of patient's breathing in) reveals the Lepene symptom.

The Murphy symptom is tenderness at the moment the doctor is standing behind the patient and sinking his hand into the area of patient's gallbladder projection while the patient sits leaning forward and breaths in.

The tenderness at the time of thumping the right costal arch with the doctor's palm rib while the patient holds his breath on inspiation reveals the Orthner-Grekov symptom.

The Mussi (right frenicus-symptom) symptom is tenderness appearing while pressing between the legs of the right sternomastoid muscle near the clavicular edge. Regions of increased skin sensitivity are revealed in the right subcostal area, under the right scapula, near the acromial process, these are Zakhariin-Ged's areas.

Gallbladder Characteristics in Some Pathological Conditions

Diseases	Morphological changes	Gallbladder characteristics
Cholecystitis	The gallbladder wall inflammatory infiltration, stones presence in the gallbladder cavity (not necessarily present), possible pericholecystitis	- very tender - slightly thickened - enlarged - displaced with difficulty* (in case of pericholecystitis)
Gallbladder dropsy	Biliary duct obturation, gallbladder repletion with bile and mucus (“white bile")	- significantly enlarged - moderately painful - slightly thickened - wall tension
Pancreas head cancer	Tumour squeezing the common bile duct, distended and repleted (overfilled) gallbladder, mechanic jaundice	- (+) Kurvuasie-Terie symptom - significantly enlarged - painless - elastic - wall tension
Gallbladder tumour	Tumour sprouting into the gallbladder wall, comissures around the gallbladder, inflammation signs	- enlarged - painless - thickened - displaced with difficulties - may be tuberous

EXAMINATION OF THE URINARY SYSTEM

Examination of the urinary system is carried out in the following sequence: questioning of the patient, inspection of the patient's lumbar region (the small of the back), palpation of the kidneys (including the penetrating palpation of the renal and ureter points of pain), tapping the kidneys area with the doctor's hand, and auscultation of the renal arteries. Then the urinary bladder is investigated (with palpation and percussion if enlarged) and then the outer sexual organs in males).

Interrogation

Specific signs are characteristic of quite a few urinary disorders. They are: ache in the small of the back or lower abdomen, the presence of swelling, disturbed urination, change in the colour of urine.

Pains of the urinary system diseases may be various in their character and localization. As a rule, they may be caused by the three main mechanisms: a spasm of the urinary tract, an inflammatory swelling of the mucosa and distention of the renal capsule.

Severe paroxismal (in attacks) pains in the lumbar area, often one-sided and radiating along the ureters down to the lower abdomen and outer sexual organs are called a kidney colic.. These are due to the irritation of the nerve endings of the urinary tract with a stone moving along them. This brings about a spasm of the ureter smooth muscles.

Pain in the small of the back occurs because of the renal pelvis being distended with the urine when its excretion is complicated by the presence of a stone or inflammatory process in the ureter mouth.

Intensive pains coming in attacks appear in renal infarction; they are due to the fast significant distention of the kidney capsule.

Moderate aching in the small of the back or feeling of heaviness in this area may result from an inflammatory kidney trouble due to the swelling of the renal tissue.

When a movable "floating" kidney is present pain may arise because of physical exertion (jumping, shattering travelling) or because of the kidney displacement and twisted vessels and ureters.

In patients with kidney troubles swelling is localized in the places where there is loose subcutaneous cellular tissue (under the eyes on the face). The swelling tends to increase in the morning and decrease during the daytime.

Disturbed urination (dysuria) may manifest itself as change in the amount of urine, in the frequency of urination and as a painful sensation.

A significant increase of diuresis (over 2 litres a day) is called *polyuria*. It may result from taking a large amount of fluid, from the swelling shrinkage, from chronic renal failure. Polyuria is often associated with *pollakiuria* - frequent painless urination accompanying inflammatory diseases of urinary tract, taking diuretic remedies, the astheno-neurotic syndrome.

It is known that normally 60-80% of the whole day urine is excreted during the daytime (from 8 a.m. to 8 p.m.) When the night diuresis exceeds the day one, they call it *nycturia* (nocturia). This is found in cardiac and / or renal failure when the lying position of the patient improves his or her heart and kidneys functioning.

Urination may be painful, it is called *alguria*. Frequent painful urination is usually characteristic of a urinary tract infection (cystitis, uretritis) and it is called *stranguria*.

Decrease of the day urine amount excreted to less than 500 ml is called *oliguria*. Oliguria may be revealed when swelling is growing in severe renal failure and at the terminal stage of chronic renal failure. Extrarenal (not connected to kidneys) causes of the diminished diuresis are also possible, these are blood loss, diarrhea, incoercible vomiting.

Decrease of the day urine amount to 200 ml and up to none is called *anuria*. Anuria may be true, or renal, when the urine production is impaired (secretary anuria) and it may be false (excretary anuria, or *ischuria*) which is due to the retention of urine excretion out of the urine bladder, with the kidneys function being preserved, as a rule (adenoma of the prostate gland, urethra stricture, central nervous system diseases, taking atropin or some other drugs).

Urine bladder diseases may be accompanied by dull aching or cutting pains over the pubis. Kidney troubles may cause change in the colour of urine. At the acute onset of glomerulonephritis the urine gets the colour of .meat dishwater.(due to a large number of erythrocytes, leucocytes, mucus and epithelium in it), in pyelonephritis urine becomes turbid due to pyuria, kidney colic resulting from urine stone disease is followed by macrohematuria.

In the cases when there is associated renal hypertension, other symptoms appear such as: headaches, dizziness, .flashing of flies in front of the eyes and other disturbances of the vision, pains in the heart, short breathing.

Developed chronic renal failure causes agonizing skin itching, nausea, vomiting and other unpleasant sensations caused by the excretion of the nitrogen metabolism waste through the skin, lungs and gastro-intestinal tract.

Questioning a patient one should keep it in mind that some patients suffering from urinary disorders (e.g. from the latent form of chronic glomerulonephritis) don’t complain of any signs at all or have only non-specific complaints like weakness, rapid fatigue, reduced working capacity, sleep pattern disruption). This makes it difficult to suspect a kidney pathology and perform a specific investigation. That is why gathering the further information on the case history becomes especially important.

It is necessary to make it clear if there is an association between the appearance of the signs mentioned above and a previous disease (quinzy, execerbation of chronic tonsillitis etc), chilling of the patient (a long stay in the cold),, allergic reactions, occupational nephrotoxic intoxications (heavy metals salts, bensol combinations etc).

One should find out the family history: the presence of kidney polycystosis, urine calculus (stone) disease, nephrogenic non-melitus diabetes, kidney amyloidosis etc in close relatives.

Female patients are asked about the course of their previous pregnancy as there may occur nephropathy due to late toxicosis.

Finally, it is important to take into account possible associated diseases that often affect kidneys: diabetes mellitus, hypertension, tuberculosis, exanthematous (systemic) erythematosus lupus etc.

The patient's consciousness may be changed to any state from clear to comatous one (uremic coma) depending on the severity of the patient's condition. Marked short breathing may lead to the enforced patient's position, it is orthopnea. The forced patient's position can be frequently observed in paranephritis (purulent inflammation of the perirenal cellular tissue). The patient is then lying on his side, with his leg bent in both pelvic and knee joints. It is also common in the kidney colic when the patient takes the position of Trendelenburg. Pallor of the skin develops because of the spasm of the skin capillaries and the secondary anemia.

Inspection

Inspection of the abdomen and lumber region of the patients with renal troubles does not usually show any visual changes. One can notice hyperemia and swollen skin of the corresponding area in paranephritis. A minor bulge at the affected side may be found in the presence of markedly enlarged kidneys (in case of a tumour, polycystosis).

Palpation

Palpation of kidneys is performed bimanually (with both hands), with the patient being in two positions: standing and lying, according to the general principles of the deep palpation. It is advisable to carry out this examination with the patient's bowels empty. To palpate the right kidney one must put one's left palm on the right half of the lumbar region, a bit lower the 12th rib. The four fingers of the right hand, slightly bent, are put below the costal arch, towards the outside from the abdominal straight muscle edge. One should palpate collaterally (along) to the backbone. On expiration when the hands approximate each other most the right hand fingers slide down to palpate the lower tip of the organ if the kidney is enlarged or moved down. To palpate the left kidney the doctor's left hand moves under the left half of the small of the back, and the right hand repeats palpation with the same technique described above. An enlarged kidney may be found in hydronephrosis, in the presence of polycystosis or tumour. The kidneys can be moved down (nephroptosis) to a various degree. In the 1st degree the lower edge of the kidney can be felt, in the 2nd degree the whole kidney can be felt, in the 3d degree the whole kidney can be palpated and it is displaced into the other half of the abdomen (referring to the spine).

The technique of the balloting palpation is used in ascites. The doctor's right hand fingers make quick jolting movements along the anterior (front) abdominal wall from the top downwards.

Penetrating palpation is applied to reveal tenderness in the projection of kidneys and ureters. To discover tenderness in the kidney projection the technique

of clapping is employed. To do this, the doctor's right hand is put into the area of the kidney projection, with his left hand clapping the back of the right hand. The symptom is considered positive if some tenderness is revealed with this clapping.

Percussion

Percussion is used to determine the upper edge of the urine bladder. When the latter is overfilled the tympanic sound is transformed into the dull one, which may be revealed at the bladder's upper edge by percussion.

Auscultation

The systolic murmur auscultated over the kidney artery projection may point to its stenosis.

EXAMINATION OF THE BLOOD SYSTEM

The notion of the blood as a whole system was first developed by G.F.Lang in 1939. Since then the system has been considered to comprise peripheral blood, hemopoietic (blood creating) organs, i.e. bone marrow, spleen, thymus, lymphoid tissue along the gastro-intestinal tract and other organs; these are also the organs of blood destruction: reticulohistocytic system, spleen, liver and the regulating neurohumoral apparatus.

Interrogation

Most of the patients with blood diseases have general complaints, such as weakness, dizziness, buzzing in the ears, tendency to faint, increased fatigue, reduced working capacity, heart palpitation, short breath on physical exertion. These signs are characteristic of the conditions accompanied by the low hemoglobin and or erythrocytes count (anemia), they got called a general anemic syndrome.

Haemophilia (abnormally long and frequent bleeding) of various localization and degree may be seen in bleeding diathesis.

Quite often patients with hemopoietic diseases have fever that is usually subfebrile (e.g. in hemolytic anemia) This may become hectic with marked sweating when there is a blood tumour and associated infection. Undulating fever, with the temperature getting higher gradually for 1-2 weeks, is specific for lymphogranulomatosis.

Iron defeciency conditions bring about sideropenic signs. They are: distorted taste sensations, choking during a meal, difficulty in swallowing, pains in the upper third of the esophagus caused by atrophic changes of the mucous membrane.

Pains in the right and left subcostal areas are often due to the appearance of foci of extramedullary (outside the bone marrow) hemopoiesis (myeloid or lymphoid metaplasia in the liver or spleen. Pains in bones (ossalgii), mainly in the

flat ones, also occur in hyperplasia of the hemopoietic tissue. This is called the proliferative syndrome.

Sometimes elderly people have principally neurologic signs such as parasthesia, loss of sensitivity in the limbs. These are called signs of funicular myelosis accompanying the B12 folic acid deficiency anemia.

Symptoms of impaired immunity manifested by frequent repeated colds, severe pneumonia associated with abcesses, quinzy with necrotic patches characteristic of the acute leucosis onset.

However, the symptoms mentioned above are not very well marked, as a rule, especially in the elderly people. In this case the first and only sign of a damage of the hemopoietic system is an isolated change in the blood test: anemia, leucocytosis etc.

Inspection

Inspecting a hematologic patient one should assess the state of the patient's skin and mucous membranes. In anemia one can notice pallor of the skin and mucous membranes, of the eye conjunctiva, the mucous membrane of the tongue and gums. The tongue may be hyperemic (.raspberry tongue.), its papilla flattened ("bald tongue"), with aphthae. The pallor of the skin may have various tints: the jaundice one of the light-lemon shade in B 12 folic acid deficiency anemia; the waxy one of light greenish shade in early and late chlorosis. In aplastic anemia acute pallor, especially of palms and ears is associated with hemorrhagic rash. Patients with erythremia are characterized by the cherry-red complexion.

Single or multiple hemorrhages may appear on the skin, they are: petechiae, purpura, ecchemosae, hematomae. They are mostly distinctive of patients with hemorrhagic diathesis. Patients with leucosis may have hemorrhages on their mucous membranes. The nail plates get dull, brittle, covered with transverse lines, which is a characteristic symptom of anemia. The hair may become brittle and fall out.

Palpation

Special attention should be paid to the palpation of the lymphatic nodes. Hematologic patients are characterized by multiple systemic involvement of lymphatic nodes progressing enlargement of these. They are painless, there are no cavernous suppuration or adhesion to the skin.

The skin turgor is usually reduced. There is tenderness along the ribs, the breastbone, the distal portions of long bones. The soles sensitivity to pain is reduced due to funicular myelosis.

Palpation of abdominal organs not uncommonly reveals hepato-spleno-megalia. Palpation of the spleen is carried out when the patient is lying on his back or on the right side (according to Sali). The doctor's left palm is placed on the patient's left costal arch to restrict its motion. The patient breathes out, and the doctor's right palm(the fingers put together) sinks down deep into the abdomen, in

the left subcostal area, moving progressively from the navel towards the left costal arch. The palpating hand is fixed in the same way as it does in the palpation of the liver. Normally the spleen is not palpated. When enlarged, it may be soft or hard in consistency, it may slightly bulge from under the costal arch edge, or it can occupy the whole left abdominal half (in myeloleucosis).

Percussion

Percussion usually reveals extended borders of the splenic dullness. The spleen borders are determined along the midaxillary line, starting from the 5th rib and further downwards until the dullness appears. Then the lower spleen pole (edge). Having made its vertical diameter clear (normally its borders lie within the 9th-11 th rib), one should determine the spleen length (6-8 cm normally); to do this percussion is carried out along the 10th rib The spleen's width is normally 4 ± 1 cm.

Rapping the flat bones is painful in blood diseases, as a rule. Rapping the costal arches may produce tenderness due to the liver and spleen capsules distention.

Auscultation

In anemia on auscultation the 1st heart sound becomes loud ("clapping") at the apex because of the smaller systolic output caused by the compensatory tachycardia. When the anemic syndrome is well marked soft systolic murmur can be heard at every auscultative point; it occurs when the blood flow grows faster. Continuous systolic-diastolic "humming-top" murmur is heard over the jugular veins. When the patient's state is terminal the heart sounds may be dull due to the decreased contracting capacity of the myocardium. Serous membranes friction is sometimes heard over the spleen and liver (in perihepatitis or perispleenitis).

To define the degree of the main hematologic syndromes (anemic, hemorrhagic or proliferative) more precisely, after evaluating the physical findings it is necessary to perform a great deal of special laboratory and instrumental investigations.

EXAMINATION OF THE ENDOCRINE SYSTEM

The endocrine system is formed by the internal secretion glands producing biologically active substances . hormones and secreting them into the blood. The classic endocrine glands include: hypophysis (pituitary), thyroid, parathyroid, the pancreatic islets (Islets of Langerhans), adrenals, genital glands, and epiphysis. Besides, a number of hormones are produced in the gastro-intestinal tract, thymus, the central nervous system, placenta, several internal organs (e.g. the pericardial

sodiouretic hormone in the heart, the renal and erythropoetic hormones in the kidneys etc).

According to their chemical composition hormones can be divided into peptides which are derivatives of aminoacids (catecholamines, serotonine, dopamine, thyroxin, triiodinethyronin, insulin, glucagon, the luteinizing hormone etc) and steroids which are the cholesterol derivatives (e.g. cortisol, aldosterone, estrogen, testicular hormone etc).

The endocrine system serves a variety of functions. In the first place, this is maintaining the inner medium of the body, which involves storing and utilization of energy (insulin, glucagon, cortisol, growth hormone, aldosterone, antidiuretic hormone). No less important is the task of the endocrine system to control the body's growth and development (growth, sex hormones) and its reproductive function (reproductive hormones). Most of the hormones produce multiple effects on the body.

The hormone secretion is ruled by the principle of feedback. Increased concentration of a hormone in the bloodstream causes a change in the target organ functioning and production of substances inhibiting any further secretion of this hormone. Thus, hypothalamus releases liberins (releasing factors) modifying the pituitary activity with a certain biological rhythm, and in this way it regulates the peripheric internal glands activity.

Apart from this, the paracrine and the autocrine systems play an essential part in the hormone control over the body. In the former, the hormone affects the cells lying nearby (e.g. D-cells of the pancreatic islets influence the insulin release of the B-cells and the glucogon release of the A-cells). In the latter, the hormone affects the cell where it is itself produced (e.g. insulin controls its own production in the B-cells of the pancreatic islets).

The majority of the endocrine disorders result from either hyperfunctioning or hypofunctioning of the gland or of the target tissue, they may also be due to some change of the anatomy of these organs.

Interrogation

Patients with an endocrine pathology may have quite various complaints. The most frequent cause of these complaints is a disturbance of the *functional state of the central nervous system*. So, the increased functioning of the thyroid gland – hyperthyroidism - results in the enhanced excitability, unmotivated anxiety, loss of sleep, irritability, irascibility (hot temper), tearfulness (ready tears) etc. Hypothyroidism brings about lowered interest to the world around, bad memory, somnolence (drowsiness). Patients with the hypophyseal cachexia (panhypopituitarism, Simmond's disease) caused by the hormone deficiency of the pituitary frontal lobe and those with the adrenal cortex chronic failure (Addison's disease) may complain principally of marked general weakness and acute muscular mobility loss.

Patients often complain also of *weight loss*. It can be found in severe diabetes mellitus, in hyperthyroidism, in Addison's disease. In contrast, another group of

patients notice marked weight gain, enlarged fat deposits in different parts of the body (the trunk, limbs chest). Patients with hypothyroidism have the adipose tissue relatively proportionally distributed throughout the body. In patients with a pituitary tumour or adrenal glands disease or syndrome of Cushing-Itzenko the adipose tissue is deposited mostly on the face, neck, shoulders and trunk, with their extremities and buttocks having the ordinary subcutaneous fat tissue layer; this results from the overproduced by the body glucocorticosteroids. The female type of the fat distribution in males (the fat deposited in the lower abdomen, the pelvic area, on the thighs and buttocks) is due to the deficient production of the sex hormones, a pathology of the hypothalamo-hypophyseal system.

Patients with *hyperthyroidism* frequently complain of feeling hot, fever, increased sweating. Patients with hypothyroidism suffer from feeling chilly resulting in the habit of wearing warm clothes, even in summer.

Sometimes the main signs the endocrine disorders bring to the patient are those associated with the *cardio-vascular system*. Bad headache, dizziness associated with the arterial hypertension accompany the syndrome of Cushing-Itzenko, hyperaldosteronism (Conn's syndrome. In pheochromocytoma (a hormonally active tumour of the adrenal medulla producing catecholamines) typically hypertonic crises can occur, accompanied by the visionimpairment, acute headaches and occasional loss of consciousness. In contrast, in hypocorticism orthostatic hypotension often takes place.

Palpitation, cardiac arrhythmia and shortness of breath in insignificant physical exercise are characteristic of patients with diffuse toxic goiter. Similar complaints accompanied with the physical signs like the accent of the1st heart sound on the heart apex, systolic murmur and ciliary arrhythmia may be misinterpreted as an evidence of mitral stenosis. The symptom of the typically angina pectoris in the leg calfs in walking (the intermittent claudication (lameness)) due to the affected coronaryarteries and the lower extremeties arteries are quite common to patients suffering from diabetes mellitus.

Endocrine system diseases may cause respiratory organs pathology. In mixedema due to the thickening of the laryngeal mucous membrane the patient.s voice may become hoarse, harsh. Shortness of breath in obesity is caused by the high position of the diaphragm. This condition, especially in people of small height, as a rule, accompanied by drowsiness brought about by the reduced lung ventilation, got the name *Pickwickian syndrome*.

Digestive system disturbances are also quite common in association with the endocrine system diseases. So, diffuse toxic goiter is accompanied with loose stools, whereas hypothyroidism, on the opposite, causes meteorism and constipation. Addison's disease can lead to nausea and vomiting. Big appetite is characteristic of hyperthyroidism, and inpatients with diabetes mellitus it can turn into a very urgent feeling (bulimia). Another complaint very typical of a patient with diabetes is thirst. While drinking up to 15 or 20 litres per day such patients may still feel dry mouth.

Acute *abdominal pains* simulating a surgical emergency sometimes occur in patients with acute adrenal failure or in the hyperglycemic precoma. Secondary

(symptomatic) ulcer of the stomach and duodenum, distinguished by the dramatic pain symptom, severe course and the tendency to be complicated occur in the patients with hyperparathyroidism.

Disturbances of the *urinary system* function associated with the endocrine system pathoogymost commonly manifest themselves in persistent polyuria (in diabetes mellitus andnon-mellitus) and in attacks of renal colic when concrements have been formed in the kidneys (in hyperparathyroidism).

In thyrotoxicosis and hypothyroidism disturbed sexual functions can be found.

Various neurologic disorders due to the progress of the diabetic neuropathy are revealed in diabetes mellitus.

Taking a life history one should determine the most probable facts that could have caused the endocrine disorder. Thus, a psychic trauma may appear an immediate cause of thyrotoxicosis. Hypothyroidism may result from the subtotal resection of thyroid for diffuse toxic goiter. Chronic adrenal failure is often a result of tuberculosis.

Hereditary traits play an important part in the development of an endocrine pathology. Inparticular, patients with both diabetes mellitus and diffuse toxic goiter mention the family tendency speaking of the origin of their disease in most cases. The risk of developing diabetes mellitus increases significantly in the women who have given birth to a baby weighing over 4.5 kg.

Overindulgence in refined carbohydrate food contributes to the development of obesity and diabetes mellitus of the 2nd type (“obese” diabetes)

Decrease of the iodine level in the environment may result in the development of endemic goiter.

Inspection

It is important to take into account the patient’s appearance. In gigantism (in males over 200 cm, in females over 190 cm) the person has proportionally enlarged skeleton, soft tissues, internal organs as the pathologic increase of the growth activity takes place before the ossification of the epiphyseal cartilages has been completed (in the childhood). In an adult person surplus of the growth hormone results in the increased width of the skeleton bones (acromegalia) as the growth regions has already been closed. In some cases big height may be caused by the deficient function of the sex glands (hypogonadism) and by the syndrome of Marfan (congenital differentiated abnormal connective tissue development). Severe retardation in growth is the main evidence of hypophyseal nanism; it is associated with the reduced secretion of the growth hormone. This disorder is characterized by the height under 135 cm with the proportional body build (proportional nanism). In the patients with hypothyroidism that appeared in childhood one can also see some growth retardation, however, their body build is disproportional, with their extremities being relatively shorter. To make a differential diagnosis one should keep it in mind that short height can be due to a severe somatic disease that the person had in the childhood, tuberculosis of the

spinal column, congenital abnormality of the cartilageous tissue (chondrodystrophy), some chromosome abnormality (Shereshevsky-Terner syndrome, Down disease). Sometimes one can notice that the patient looks older (hypothyroidism) or younger (hyperthyroidism) than his or her age.

Inspecting the skin and its derivatives in patients with the endocrine disorders one should take into account the colour and cleanliness of the skin. In Addison's disease (due to the deposit of chromatin in the malpigievous layer) the skin gets brown or bronze The areas of frequent pigmentation are those open to the sun (forehead, neck, arms) and also the areas of physiological pigmentation (nipples, scrotum), the regions of the body usually subject to irritation by the clothes folds or the belt. Pigmented mucosa of the lips, gums, the soft and hard palate is also typical. Fine scales desquamation of the skin is characteristic of hypothyroidism. Multiple traces of scratching show persistent skin itching in diabetes mellitus. Trophic ulcers of the lower third of the shank is common in the incompletely compensated diabetes mellitus. Crude broad irregular postoperative scars develop in the wound on its secondary healing when it is being again covered with the skin after some suppuration complicating the postoperative course. This is also typical of incompletely compensated diabetes mellitus In the syndrome and disease of Cushing-Itzenko, so called juvenile hypercorticism (hypopituitarism) and when glucocorticosteroids have been taken for a long time broad reddish-violet scars (striae atrophicae) appear on the abdominal skin, on the upper thighs in the area of the shoulder girdle and on mammalian glands. General increase of the skin moisture can be found because of the increased sweating (hyperhydrosis) during the episodes of hypoglycemia due to the overdosage ofinsulin. In patients with thyrotoxicosis the skin is always moist, warm, thin, velvet. In hypothyroidism, in contrast, it is dry, cold, rough, thick, solid, uneven. Marked thickening of the skin is often seen in acromegalia. Patients with hypothyroidism occasionally have peculiar swollen subcutenous cellulous tissue due to mucin collected there. Such mucous solidswelling (mixedema) occurs most often on the face, the frontal surface of the shanks, backofthe feet and hands Excess hair on the trunk and limbs (hypertrichosis) in females, especially associated with the moustache and beard (girsutism) can be discovered in thesyndrome and disease of Itzenko-Cushing, acromegalia, ovarian tumour or their cystous regeneration (Stein-Leventhal syndrome). On the opposite, lack of hair in the armpits, on thepubis and on the face in males is usually brought about by the deficient production of sex hormones. In hypothyroidism the hair becomes dull, dry, brittle and has split ends. Sometimes there is its diffuse fall out (allopecia).

Local inspection is also important in making diagnosis of an endocrine disorder. Special attention should be paid to the patient's face. A patient with acromegalia has a puffy face and is roughly featured due to a big nose, full lips, big ears, prominent brow and cheek bone arches, the lower jaw stuck forward. The facial skin gets rough, with deep longitudinal folds. The swollen thick tongue makes the patient's speech difficult. The syndrome and disease of Cushing-Itzenko gives the patient the so-called "full moon" face: it is round, red, glossy, fatty. A patient with hypothyroidism has a pale puffy face.

However, the most various local symptoms can be found, when the thyroid's function is increased. A practic pathognomonic sign of thyrotoxicosis is bulging eyes (exophthalm). Most are frequently bilateral, though sometimes it can be unilateral. Exophthalm develops gradually, as a rule. It is usually associated with a special gloss of eyes (Krause's symptom), widely open eyes slits (Dalrimpl's symptom), which gives the face an expression of fear, and with the fixed intent "angry" stare (Reprev-Melikhov symptom). Besides exophthalm, the patient can be found to have the following eye signs: Gref's symptom (that isretardation of the upper eyelid in the movement of the eyeball down), Coher's symptom(appearance of a sclera stripe between the upper lid and the iris in the movement of the eyeball upwards), Moebius's symptom(deficient convergence of the eyes when an object is approaching), Stelvag's symptom (rare winking), Botkin's symptom (periodic opening of theeye slit when the gaze is fixed). The eye symptoms are caused by the increased function of the sympathetic nerves of the eye muscles. Apart from the above-mentioned, there are also "subcidiary" symptoms: Ellinger's symptom (pigmentation around the eyes), Jofrouau's symptom (no wrinkling of the forehead in looking upwards), Rosenbach's symptom(fine tremour of the closed eyelids), Zenger's symptom (puffy eyelids) and Stasinsky's symptom (injecting of the cornea in the shape of a red cross).

Palpation

It is only the thyroid that is attainable for palpation, among all the endocrine glands. Palpation of the thyroid gives a rough impression of its size, the quality of its surface, its solidity, presence of any nodes, its tenderness. However, occasionally one succeeds indiscovering enlargement of the thyroid, and it may be rather significant (the goiter of the 4^{th}-5^{th} degree). There are a few ways to palpate the thyroid.

One should start with the light touch palpation. The doctor faces the patient, fixing the patient's neck with his left hand, he puts his right palm on the frontal neck surface longitudinally, to feel for the thyroid cartilage and the annular one, below it, as the thyroid normally lies under this. Having found it, one takes the patient's neck round with both hands in such a way that the doctor's thumbs cushions should be situated above the isthmus of thyroid. To palpate better the doctor should ask the patient to swallow. Then with the right thumb pushing away the sterno-clavicular-mastoid muscle, the doctor palpates the right thyroid lobe, and after that he palpates the left thyroid lobe in the same way, with his left thumb. If the lateral lobes are enlarged and some nodes (consolidations) can be revealed, palpation should be carried out with the doctor's 2^{nd}, 3^{d}, 4^{th} finger tips put together, first on one side, then on the other side. The fingers are put behind the back edge of the sterno-clavicular-mastoid muscle in turn, on the right and on the left, and one palpates from the thyroid cartilage towards the sterno-clavicular-mastoid muscle. To determine the thyroid's mobility (displaceability) the patient is offered to take some water into his mouth and swallow it once, as a result the thyroid gets displaced upwards and becomes easily palpable.

With the second palpation technique, the doctor stands next to the patient, being on his right and a little in front of him. To relax the cervical muscles better the patient bends his head ahead a bit. The doctor fixes the patient's head with his left hand from behind. The thyroid is palpated with the right hand, with its right lobe being palpated with the doctor's thumb and its left lobe with the other fingers of the right hand put together.

With the third technique the doctor stands behind the patient. His both thumbs are placed on the posterior neck surface, but the rest of the fingers are in the area of the thyroid cartilages, inwards from the frontal edge of the sterno-clavicular-mastoid muscles.

The cases when the thyroid can't be palpated are considered the 0 degree of its enlargement. Normally the thyroid's isthmus and the upper poles of the lateral lobes may be felt indistincly (0-1st degree).The width of the isthmus is not more than the middle finger's width in this case, the gland's tissue is smooth, painless, of the solid elastic consistency, it is not fused with the skin or surrounding tissues.

The following 5 degrees of the thyroid enlargement are generally distinguished:

The 1stdegree. The gland is not visible. An enlarged (broadened and thickened) isthmus is felt on palpation.

The 2nd degree. There is one or both lobes enlargement, it is distinctly visible on swallowing.

The 3d degree. The enlarged gland fills up the jugular pit and makes the neck contour seem thick ("thick neck" symptom). Such gland is already called goiter.

The 4th degree. The gland is significantly enlarged, it goes outside the external edges of the sterno-clavicular-mastoid muscle and changes the shape of the neck sharply.

The 5th degree. The goiter is huge, which results in the neck deformity.

Thyroid can be enlarged in thyrotoxicosis, thyroiditis, some growth process. Diffuse toxic goiter produces a proportional enlargement of the whole gland or one of its lobes, the gland maintains its normal consistency, it is painless, the skin over it is felt hot and is sometimes hyperemic Tuberculated or solid nodular formation in the thyroid region, the thyroid's indisplaceability on swallowing and its fusion with the surrounding tissues, associated with a change of voice and breathing with a noisy inspiration makes one think of cancer of thyroid. If cancer is suspected one should palpate the regional lymphatic glands thoroughly, first of all, the frontal cervical lymphatic glands located along the internal edge of the sterno-clavicular-mastoid muscle.

After palpation one should measure the neck circumference at the level of thyroid, orienting on the spina process of the 7th cervical vertebra behind and the most prominent part of thyroid in front. If some single nodes are found their diameter can be measured with the help of special dividers.

Percussion

Percussion is of limited value in determining the hormone status. Shortening of the percussion sound above the manubrium sterni may point to goiter behind the breastbone.

Auscultation

Pulsating murmur auscultated above the thyroid is characteristic of diffuse goiter. Already at the stage of physical examination one may suppose some endocrine disorder. However, to make the final diagnosis one should compare carefully both the clinical findings and the laboratory and instrumental data.
Although the study of the endocrine system is one of the final steps of a patient's clinical examination, one should keep it in mind that hormone regulation can be disturbed in anysomatic pathology causing the main symptoms of a disease.

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