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Topographic Analysis of the Morphometric Location of the Stomach

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Relevance of the research. During a simple X-ray examination of the abdominal cavity, the presence of air in the stomach, swallowed with food or during a conversation, can be seen. In the vertical position, the air forms a gastric bubble, and in the horizontal position it moves to the upper part of the stomach. In the horizontal position on the back, the air bubble moves to the lower part of the body, to the sinus and antrum, which leads to their appearance. If the upper parts of the stomach are significantly tilted back, for example, in a hypersthenic person, in some cases the gastric wall may be visible. In direct projection with a tangential direction of the rays along the tilted part of the stomach in the left hypochondrium, the shadow is determined in the form of a dense formation of a round or irregular shape, in the center of which there may be a clearing. occurs as a result of air accumulation.

The X-ray of the stomach when taking a barium suspension depends on the constitution, gender, tone, body position of the subject and other factors. The shape and condition of the stomach are always assessed in conjunction with the physical characteristics and constitution of the person using a multi-projection study. In the vertical position of the patient, in the direct projection , the shape of the stomach is depicted in two variants, hook-shaped and horn-shaped, depending on the degree of posterior deviation of the longitudinal axis of the stomach body: in an asthenic person it is almost vertical (hook-shaped stomach), in a hypersthenic person with a high diaphragm, horizontal (horn-shaped). As the deviation of the longitudinal axis of the stomach increases posteriorly, the curvature of its upper parts increases, and the lower pole moves upward, which is clearly defined in the lateral projection.

When the object moves from a vertical to a horizontal position, a slight rotation of the stomach around the longitudinal axis occurs, as a result of which the lesser curvature moves towards the posterior wall, and the greater curvature towards the anterior wall. In this case, in the direct projection, the angle of the stomach, located on the lesser curvature, is often hidden behind the shadow of the stomach. In the vertical position of the object, the lesser curvature coincides with the right contour of the shadow of the stomach. When the position of the stomach approaches the horizontal, the patient should be turned forward with his right side to bring its lesser curvature and angle to the right contour, and the more the longitudinal axis of the body is tilted, the closer the stomach approaches the horizontal.

The stomach is located mainly in the left hypochondrium. Despite the presence of a ligamentous apparatus, it can move in a very wide range. The position of the lower border of the stomach is the most variable, which depends on the sagging of the sinus, which in turn depends on the constitution, tone, amount of contents, etc. The lower border of the stomach is on average 2 - 4 cm above the costal margin. In asthenics, the lower pole of the stomach can descend below the pectineal line. The immovable parts of the stomach include the fornix, and when the stomach is tilted back, it is the highest part of the anterior wall, which is always located close to the left dome of the diaphragm due to the suction effect and the presence gastrodiaphragmatic ligament.

The upper point of the gastric bubble is projected 0.5 - 2.5 cm below the upper contour of the diaphragm. This distance is the sum of the thickness of the diaphragm and the stomach wall, which should be assessed not only in direct, but also in lateral projection. The thickness of the stomach wall is not constant, since it depends on the degree of its distension by the air in the gastric bubble. Reducing the gastric bubble leads to an increase in this distance, and vice versa. A constant place is also occupied by the cardiac part, which is located at the junction of the esophagus with the stomach and is located along the lesser curvature of the body at the left edge of the spine or 1 - 1.5 cm to the

left of it. Relatively constant places include the pylorus, located along the right contour of the spine L1 - 2. It corresponds to the exit from the stomach into the duodenum and occupies a constant position.

The longitudinal axis of the outlet of the stomach relative to the frontal plane of the abdominal cavity is located posteriorly, retroperitoneally in the direction of the duodenum. This deviation of the antrum and pylorus posteriorly and upwardly, which is observed with a decrease in gastric tone, is best detected in the lateral projection. In this case, the stomach has the appearance of a cylindrical shadow, the anterior contour of which is located close to and parallel to the anterior slope of the diaphragm and the anterior abdominal wall.

The upper part of the stomach is located near the spine or is projected onto it. The larger the anteroposterior size of the abdominal cavity and the higher the diaphragm, for example, in a hypersthenic person, the better the visualization of the gastric outlet in the lateral projection. With a small anteroposterior size of the abdominal cavity in a person with a flat or retracted abdomen, the outlet of the stomach and even the bulb of the duodenum can coincide projectively with the body of the stomach and be hidden in its shadow.

During the X-ray examination, it is also necessary to assess the width of the retrogastric space, which increases with extensive pathological processes in this area, often associated with pancreatic diseases. Normally, this distance should not exceed the width of the lumbar vertebral body (in normosthenics and asthenics). In a hypersthenic person, it is impossible to judge the increase in this space by this indicator.

In the supine position, a pneumorelief picture is created in the outlet sections of the stomach containing gas, that is, a double-contrast image with gas and barium suspension remains on the surface of the mucous membrane in the form of a thin layer. If in this case the mass of barium that has passed into the upper parts of the stomach is too large, then the back tilt is too large. In the prone position, the stomach also shifts towards the diaphragm and becomes oblique. The uppermost part remains a vault, where gas accumulates and A pneumorelief pattern is formed. The barium mass moves to the lowest part of the stomach, which is the antrum.

Mucous membrane relief

The gastric mucosa is a unique parenchymal organ consisting of cylindrical glands with connective tissue septa. There are three types of glands in the stomach - the main, pyloric and cardiac. The main glands consist of four types of cells: the main (produces pepsinogen); the lining (produces hydrochloric acid); the accessory and integumentary (produce mucus). The pyloric and cardiac glands also produce mucus. To do this, a small amount of barium suspension must be placed in the stomach, covering its inner surface with a thin layer, and also by applying dosed compression (pressure on the anterior abdominal wall under the control of transillumination) to bring the anterior and posterior walls of the stomach together.

As a result of the sum of the projections of the patterns of the opposite walls of the stomach, the folds can intersect , and if their directions coincide, the effect of thickening, thinning or increasing the folds can be observed. The widest, up to 10 mm, and the highest folds of the mucous membrane are located in the area of the fornix and sinus of the stomach. In the antrum, folds are formed only as a result of the motor function of the muscular membrane, their width is almost half, and the direction changes depending on the phase of motor activity. The relief of the mucous membrane of the body of the stomach is characterized by clearly defined, anatomically pre-formed folds.

On the lesser curvature, as well as next to it, on the anterior and posterior walls, the folds are longitudinal, parallel to each other from the cardia to the angle of the stomach, and sometimes to the pylorus. The limiting folds, which extend along the lesser curvature and are called the gastric tract (border folds), at the level of the angle, usually deviate towards the greater curvature, separating the body region from the antrum. As you approach the greater curvature, the folds become more and more oblique, and the number of short anastomotic folds directed obliquely and transversely increases , as a

result of which the relief acquires a lacunar cellular structure. When moving from one wall to another, the transverse folds of the mucous membrane form a jagged contour of the greater curvature.

The relief of the mucous membrane of the body of the stomach is characterized by significant variability in anatomical types. According to the nature of the location of the folds, the following types of the structure of the mucous membrane are distinguished: - the main type - longitudinal folds 0.6 - 1 cm wide in the body of the stomach, in the antrum they are 2 times narrower, their surface is smooth, the edges are clear, the ratio of the interfold space to the interfold space is 1: 1; - cellular-trabecular type - folded, intersecting folds; - mixed type.

Assessment of the relief of the gastric folds on an x-ray should be carried out individually, taking into account the specific conditions of studying the stomach of a particular subject, since it is characterized by variability depending on a number of factors. constantly acting factors: - gender - in women, the folds are flatter, thinner than in men; - constitution - hypersthenics, unlike asthenics, have thicker and more folds; - muscle tone of the stomach - with its increase, the folds of the mucous membrane become more massive, i.e. higher and wider; - gastric peristalsis - longitudinal, flat, thin folds are formed at the level of the peristaltic wave in the exit sections of the stomach; - blood supply to the mucous membrane and the mucous membrane, the tone of the muscle fibers of the mucous membrane - with the expansion of the blood vessels, a significant thickening of the mucous membrane and expansion of the folds and hypertonicity of the muscles are observed. Mucous membrane - an increase in their height; - the degree of expansion of the stomach with its contents - as the stomach is filled with a contrast suspension, straightening, thinning, more longitudinal orientation , and flattening of the folds occur.

The contours of the stomach always depend on the relief of the folds of the inner surface. The lesser curvature, including the angular, as a rule, has a flat contour, since along it are located anatomically formed longitudinal folds. In the antrum, the lesser and greater curvatures are often flat, since in this part of the stomach the folds of the mucous membrane are formed mainly in the longitudinal direction. At the same time, the direction of the folds in the antrum depends on the predominant tone of the longitudinal or circular muscle fibers and may be different at different stages of motor activity. Transverse and oblique folds describe the nervousness of the contour in the lesser and greater curvature of this part.

of the body and the greater curvature of the sinus looks especially uneven and jagged due to the curvature of the folds and the presence of transverse and oblique anastomoses between them. With a significant elongation of the stomach, the folds can be completely flattened, and then the greater curvature and sinus of the stomach become smooth. The contours of the gastric cavity also depend on the degree of its elongation. With a small gastric bubble, the folds in the fornix are often high, forming deep dents along its contour. When air accumulates in the upper part of the stomach, the mucous membrane stretches, the folds flatten and, finally, completely disappear, and the contour of the fornix becomes smooth and convex.

When studying the relief of the mucous membrane, it is possible to identify smaller structures - gastric fields, which are called fine relief or microrelief of the mucous membrane. These are small polygonal elevations separated by grooves, on the surface of which the ducts of the gastric glands open. Typically, gastric fields do not exceed 1.5 mm in diameter , are not visible during transillumination and can only be obtained on a radiograph, performed under a number of methodological conditions. Gastric fields on the X-ray image are multiple, small, closely spaced defects of an unclear shape in relief, separated from each other by lines of barium suspension and forming an overall picture of a fine mesh.

Small regular denticles can be seen in the relief of the contour of the stomach. In cases of pronounced elevation of the gastric areas in chronic gastritis, a very pronounced thin relief of the mucous membrane is usually detected;

In newborns and infants, the sections of the stomach are not clearly separated. Therefore, it is usually divided into three parts: inlet, middle and outlet. In the horizontal position of the child, the inlet (cardiac) part is located at the level of ThIX_x, the outlet (pyloric) part is at the level of ThXII -L. In the vertical position, these sections are shifted down by one vertebra.

In school-age children, the heart region is located at the level of Thx_XI, in mature and elderly people - at the left edge of ThXI.

Located at Lin level.

In newborns, the lower border of the stomach corresponds to the level of ThXI- Lp . By the end of the first year, LIP falls to school-age children, it can be located 20-30 mm below the line connecting the iliac crests.

In adult patients, the lower border of the stomach is located 20-40 mm above the iliac crest. In the elderly, this border may be located below the iliac crest, which is associated with hypotension of the stomach and weakening of the ligamentous apparatus. The position of the lesser curvature of the antrum is more constant, it is projected onto the Ln_ni.

In newborns and infants, the stomach in a horizontal position is ball-shaped or ovoid. Often there is a stomach with a cascading curvature, which is due to the high location of the left half of the diaphragm and its upward and backward pressure by the large intestine swollen with gas.

The size of the stomach depends on age. The most intense growth of the organ occurs at 1 year of age in the form of a rapid increase in the greater curvature and the outlet, and by preschool and school age the stomach becomes similar to the stomach of mature people.

In a newborn, the stomach is about 50 mm long and 30 mm wide; in a 1-year-old child, it is 80-90 mm long and 70-80 mm wide. In newborns, the pyloric canal is 2-4 mm long and 5-6 mm wide, while in adults it is 5 to 15 mm long and 5 mm wide. The stomach volume of a newborn is 30-35 cm3, at 3 months - 100 cm3, at 1 year - up to 250 cm3, at 8 years - up to 1 liter, and in adults it reaches 1.5-3 liters.

The shape of the stomach can vary quite widely during the study, since X-ray examination involves studying it in physiological conditions. In addition, the shape of the stomach depends on its filling, tone, position in the abdominal cavity, the condition of neighboring organs, constitution, the position in which the study is carried out, intra-abdominal pressure, the amount of subcutaneous and mesenteric fat. tissues.

In the absence of contents in the stomach, its mucous membrane accumulates in folds, which form a relief called the mucosa. In infants, it is detected only in the fornix. By the age of 6, the folds of the mucous membrane are well developed and give a picture on X-ray examination similar to that of adults. In older people, the folds atrophy and quickly disappear on X-ray examination with increasing compression.

The relief of the mucous membrane has some features depending on which part of the stomach it belongs to. So, in the gastric opening, the folds can have any arrangement: longitudinal, transverse, oblique , and the cellular-trabecular structure of the mucous membrane is often found. In the body of the stomach, the folds are located only longitudinally (along the lesser curvature), with the exception of those that pass from one wall to the other through the greater curvature and have a transverse arrangement. The folds of the mucous membrane of the sinus are a continuation of the folds of the body of the stomach, smoothly bending and passing into the contour of the sinus in the form of an antrum or fan. In the antrum, the folds of the mucous membrane can have any arrangement (longitudinal, oblique, transverse).

Conclusion. At the same time, an obligatory sign of the normal picture of the antrum mucosa is the longitudinal arrangement of the folds, which can be observed during the passage of an active peristaltic wave through the antrum. Each section of the stomach is characterized by a certain thickness of the folds of the mucous membrane. The folds of the mucous membrane of the fornix have the greatest

thickness (up to 20 mm), the smallest - pylorus (in the body of the stomach their thickness is about 10 mm, in the antrum -) ; 5-7 mm. One of the important indicators of an unchanged mucous membrane is its elasticity.

REFERENCES USED

1. Balko OA, Sapozhnikov VG On methods for diagnosing chronic gastroduodenitis associated with Helicobacter pylori, depending on the type of constitution in children (literature review) // Bulletin of New Medical Technologies. 2019. No. 2. pp. 5–11. DOI: 10.24411/1609-2163-2019-16340.
2. Balko OA, Sapozhnikov VG Etiology, pathogenesis, course and treatment features of chronic gastroduodenitis in children depending on the type of constitution (literature review) // Bulletin of New Medical Technologies. Electronic edition. 2018. Issue 6. Issues 1-7. URL: http://www.medtsu.tula.ru/VNMT/Bulletin/E2018-6/1-7.pdf (accessed 10/12/2018). DOI: 10.24411 / 2075-4094-2018-16265 / Balko OA, Sapozhnikov VG. Features of etiology, pathogenesis, technology and treatment of chronic gastroduodenitis in children depending on the type of constitution (review) Etiology, pathogenesis, current and chronic treatment features of gastroduodenitis in children depending on the somatotype (literature review). Bulletin of New Medical Technologies. Electronic edition [Internet]. 2018 [cited December 10, 2018]; 6 [approx. 6 pages]. Russian. Available: http://www.medtsu.tula.ru/VNMT/Bulletin/E2018-6/1-7.pdf. DOI: 10.24411/2075-4094-2018-16265.
3. Dombayan SX, Panova IV Features of changes in the level of neuron - specific enolases in children of I-II health groups depending on physical development and gender // Postgraduate doctor. 2016. Issue 2.2. WITH . 273–278 / Dombayan SKh , Panova IV. Features of changes in the level of neuron-specific enolases in children of I-II health groups depending on physical development and gender [Features of changes in the level of neuron-specific enolases in children of III health groups depending on physical development and gender]. Doctor-postgraduate. 2016;2.2 :273-8. rus.
4. and prospects of modern pediatric gastroenterology // Pediatrics. Journal named after GN Speransky. 2016. Issue 6 (95). Pages 10–18 / Zaprudnov AM, Grigor'ev KI, Kharitonova LA. Problematic and perspective of modern pediatric gastroenterology [Problems and prospects of modern pediatric gastroenterology]. Pediatrics. Journal named after GN Speranskogo. 2016 ;6 (95):10-8. rus.
5. Koroleva IM Radiation technologies in gastroenterology: "old" and "new" in diagnostics // Consilium Medicum. 2017. Issue 8. URL: https://cyberleninka.ru/article/n/luchevye-tehnologii-v-gastroenterologii-staroe-i-novoe-v-diagnostike (access date: 09/24/2023).
6. Bondarenko AA, Cherednikov EE, Popov Art.V. Modern views on the diagnosis, treatment and prevention of rupture hemorrhagic syndrome (Mallory-Weiss syndrome) // Bulletin of new medical technologies. 2016. Issue 4. pp. 161–172 / Cherednikov EF, Maleev YuV, Chernykh AV, Litovkina TE, Bondarenko AA, Cherednikov EE, Popov ArtV . Modern views on the diagnosis, treatment and prevention of rupture-hemorrhagic syndrome (Mallory-Weiss symptom) [Modern views on the diagnosis, treatment and prevention of rupture-hemorrhagic syndrome (Mallory-Weiss syndrome)]. Vestnik novyh meditsinskikh tehnologii . 2016 ;4:161 -72. rus.
7. Shishko VI, Petrulevich Yu.Ya. Gastroesophageal reflux disease: anatomical and physiological features of the esophagus, risk factors and mechanisms of development (literature review, part 1) // Journal of GrSMU. 2015. Issue 1 (49). WITH . 19-25 / Shishko VI, Petrulevich YuYa . Gastroesophageal reflux disease: anatomical and physiological features of the esophagus, risk factors and mechanisms of development (review of literature, part 1) [Gastroesophageal reflux disease: anatomical and physiological features of the esophagus, risk factors and mechanisms of development (review of literature, part 1)]. Journal GrGMU . 2015;1(49):19-25. rus.

8. McCracken KW, Wells JM. Mechanisms of embryonic stomach development. Semin Cell Dev Biol 2017; 66:36–42

9. Farrell MB. Gastric emptying scintigraphy. J Nucl Med Technol 2019;47(2):111–119