

MORPHOFUNCTIONAL CHANGES IN THE LYMPHATIC SYSTEM OF THE
SMALL BOWEL AFTER VARIOUS TYPES OF STOMACH RESECTION

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Abstract: The morphology of the intestinal lymph node was studied in 16 experimental dogs after 2/3 gastric resection. Thus, changes in the lymphatic system of the intestine, their restoration and the reactions of the compensatory adaptation depend on the methods of gastric resection, which occurs after the acute injury of the main vascular-nervous systems of the stomach.

Keywords: lymphorus, intestines, resection, stomach.

The study was conducted on days 3, 7, 15, 30, 45, 60, 90, 180 and 360 after gastric resection. Experimental examination revealed that the diameter of the lymphatic capillaries and vessels was widening, the walls of the capillaries were formed with different growth shapes and sizes, as well as new anastomoses. Stomach and duodenal ulcer disease is one of the most common diseases of the gastrointestinal tract and occupies a significant place in the overall structure of population morbidity.

In this regard, the study of the etiology, pathogenesis, morphology, and treatment of peptic ulcer disease is relevant.

One of the most commonly used methods of treating gastric ulcer disease is resection (1,2,5,7), however, in 10-15% of patients, in the remote period after resection, pathological conditions are observed, which are called postoperative gastric ulcer syndrome >[2,3,6,7]

In explaining the mechanisms of the disease of the operated stomach, much attention is paid to the condition of the secretion of the stomach and intestines, the biliary function of the liver, the secretory and incretory activity of the pancreas. The morphology of these organs and their arterial, venous and nervous systems are studied in the experiment and in the clinic. However, research dedicated to studying the lymphatic system of the gastrointestinal tract after gastric resection is insufficient. However, it is known that the lymphatic system is responsible for ensuring microcirculation, absorption, and transport of food products, particularly fat, as well as than blood, it is responsible for ensuring microcirculation, absorption, and transport of food products, particularly fat.

Purpose: Based on the above, the purpose of this study was to determine the morpho-functional state of the lymphatic system of the small intestine after various gastric resections, which are widely used in surgical practice. Gastro-yunoplasty after Kupriyanov-Zaharov resection and Polya-Richel resection in our experiments served as a model for switching on and off duodenal food passage.

Materials and methods of research. The influence of various gastric resection methods on lymphatic circulation in the small intestine was studied:

1. Interstitial injection of methylene blue aqueous solution and biological injection method with preliminary feeding of dogs with butter (200 g), milk (500 g) and white bread (200 g), which allowed during laparotomy to study the serous, subserous lymphatic vessels of the intestinal wall, lymphatic collectors and its mesenteric nodes.
2. Interstitial injection of Herot mass with preparation of luminescence preparations from different layers of the intestinal tract, 12-15 cm long, was used to study the lymphatic vessels of the small intestine near the tracheal ligament.
3. Gistochemical and histological methods were used to study the structural changes in the small intestinal wall.

Morphometric studies were conducted using a microscope

MBC-2. The intestinal lymphatic vessels were studied on 82 dogs, 37520 measurements were made on 492 dogs, and 40 dogs underwent histological examinations. The obtained digital data was processed using the method of variational statistics (on a computer << EU - 1020>>).

Results and their discussion. Studies have established that in healthy dogs with laparotomy before gastric resection, after 2-2.5 hours, the contrast of the lymphatic vessels of the 12th finger and small intestine was observed. Due to the amount of fat in the chylosis at the height of digestion, the lymphatic vessels acquire a milk-white color. In the small intestine, the lymphatic vessels of the initial and middle sections contrasted more intensively, while in the loops of the final sections they were less pronounced and decreased in the distal direction.

In the first weeks after surgery, the results of the study did not depend on the resection method. Within 2-2.5 hours after feeding, lymphatic vessels in the duodenum and small intestine did not contrast. However, subserosal injection of methylene blue aqueous solution in this period revealed functional fullness of lymphatic vessels in these intestinal sections. From the created depot in the serous layer, the dye easily and evenly spread in all directions, filling the network of lymphatic capillaries and vessels of the intestinal wall, drainage collectors and nodes of the corresponding segment of the mesentery.

A study of lymphatic circulation on the 15th day in animals operated on by the Bilrot-1 and Kupriyanov-Zaharov method showed that 2-2.5 hours after feeding, intense contrast of the lymphatic vessels of the middle part of the small intestine was observed, with a weak injection of white chyme into the terminal loops of the initial part. As the duration of the operation increased, the degree of contrast of the lymphatic vessels increased in the distal and partially in the proximal direction.

After gastric resection using the Billroth-11 method in a Gofmeister-Finsterer modification, contrast was observed in the lymphatic vessels of the middle and terminal segments, only some large collecting vessels were found, located subserously near the mesenteric edge of the intestinal wall. In the late stages of resection using this method, with the intensity of the entire end of the small intestine,

lymphatic vessels were enlarged. In the terminal loops of the middle part, a more or less abundant network of serous subserous vessels was found. In 3 dogs, as in the early stages after resection, the lymphatic vessels of the blind and partially ascending colon continued to fill with white chyme.

The data presented indicates that in dogs, under normal conditions, fat absorption begins in the 12th finger intestine and ends in the initial loop of the end of the intestine.

The study of the lymphatic bed on clarified preparations in the first 2 weeks of all types of resection revealed a common meshwork of lymphatic capillaries and vessels with the formation of a small spotted flap. The diameter of the lymphatic capillaries and vessels.

Expansion of capillaries is accompanied by a decrease in the internal size of their petals. The lymphatic vessels are gradually enlarged in diameter and have a convoluted course and uneven contours, and sometimes they have varicose dilation in the walls of the vessels, especially the vessels of the mucous membrane. These transformations indicate an increased function of the lymphatic bed in response to increased lymph formation. The latter is caused by venous stagnation in the intestinal wall on the one hand, and on the other - due to venous stagnation, the intestinal lymphatic system is completely switched to draining increased interstitial fluid. Histological studies of small intestinal sections in control animals showed that the intestinal wall layers were pronounced.

The mucous membrane had a normal structure. The villi are long, smooth, and covered with epithelium. Large lymphoid follicles are found in the submucosal layer. The vessels of the intestines are moderately full of blood. The shick reaction revealed the presence of neutral mukopolysaccharides and a large number of mallow-colored intestinal villi and crypts.

After resection into the walls of the small intestine, edema, dystrophy, focal epithelial desquamation, enlargement of the mucous membrane villi, and infiltration of their stroma were observed. In the later stages, dystrophic changes predominated in the organ, the transformation of the cylindrical epithelium into glassy cells, the number of which significantly increased. The intestinal lymphoid apparatus is sharply enlarged.

Therefore, the results of the conducted studies showed that after gastric resection according to Bilrot-1 and its Kupriyanov-Zaharov modification, the duodenal passage of food persists, which significantly compensates for a sharp decrease in gastric digestion. The preservation of the duodenal reflex and the second phase of secretion, the regulated inflow of food masses from the gastric duct through the 12th finger into the small intestine, create favorable conditions for complete digestion during gastric resection according to Billroth-1 and its modifications.

After gastric resection according to Billroth-11 in Gofmeister-Finsterer and especially Polia-Richel modification, when food enters the small intestine from the stomach lining, avoiding the duodenum, absorption of food products, particularly fat, does not occur in the initial sections of the small intestine, as they are not sufficiently processed by digestive enzymes. They become sufficient for absorption only at the level of the middle segments of the small intestine. All of this indicates that the lymphatic system of the colon has additional compensatory and adaptive capabilities under normal conditions.

Conclusions:

1. The morphological rearrangement of the lymphatic vessels of the small intestine wall is compensatory in nature and is aimed at ensuring homeostasis of microcirculation, transportation of suspended lymph products in the presence of venous stasis and intestinal wall interstitial edema, which occurs after acute damage to the main vascular-nervous systems of the stomach.
2. Pathological changes in the wall of the small intestine, developing in the early stages after gastric resection, manifest as edema of the mucous membrane and submucosal base, changes in the shape and size of villi, and blood vessels. In the late postoperative period, with the presence of these changes in the intestinal wall, dystrophic processes develop, developing against the background of vascular-nervous trauma during the resection of the stomach according to Billroth-11, especially its Polya-Richel modification.
3. The degree of terminal displacement depends on the type of gastric resection. Operations performed using the Billroth-1 method and its Kupriyanov-Zaharov modifications cause less absorption, while operations performed using the Billroth-11 method and its Gofmeister-Finsteter modifications, and especially the Poliar-Richel method, cause greater absorption

displacement. The terminal displacement of fat absorption is explained by the discontinuation of duodenal passage of food in the context of a sharp decrease in the digestive potential of the resected stomach.

4. In conditions of sharp terminal displacement of digestion after gastric resection according to Polya-Richel, a new, non-characteristic for the lymphatic vessels of the colon function - absorption of fats is revealed, which indicates a large compensatory and adaptive capabilities of the lymphatic system.

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