SPECTRUM OF DISEASES CAUSED BY MORPHO-FUNCTIONAL DISORDERS ORGANIZATION OF ENDOCRINE CELLS IN THE COLON

Kurbanova Latofat Murodilloevna, Oripov Firdavs Sur'atovich-
Samarkand State Medical University, Republic of Uzbekistan, Samarkand;
***Roman V. Deev**, North-Western*
State Medical University named I. I. Mechnikov
Ministry of Health of the Russian Federation, Saint Petersburg.

Resume. *Endocrine cells of the mucous membrane of the gastrointestinal tract regulate intestinal activity plays an important role in laying.Macoladagastroenteropancreatic diffusion endocrine system systems the relationship between pathology, clinical presentation and Morpho-functional structure has been described.The importance of endocrine cells in the development of affected intestinal syndrome is also considered.In the article microscopic examination of biopsy samples of the colon mucosa in various diseases also described. Particular attention has been paid to rare neuroendocrine tumors.*

Keywords: *APUD-system, Es1-cells, L-cells, D1-cells, D-cells, repaired intestinal syndrome.*

Abstract. *Endocrine cells of the mucosal lining of the gastrointestinal tract play an important role in the regulation of bowel functions. The article describes the relationship between pathology, clinical picture and morpho-functional organization of cells of the gastroenteropancreatic diffuse endocrine system. The importance of endocrine cells in the development of irritable bowel syndrome is also considered. Microscopic examination of biopsy specimens of the colon mucosa in various diseases is also described in the article. Particular attention is paid to neuroendocrine tumors, which are rare epithelial neoplasms.*

Endocrine epithelial cells of the gastrointestinal mucosa are an important cellular component that performs local para-and autocrine regulation of intestinal functions. Microscopic examination of biopsies of the colon mucosa in some inflammatory and tumor diseases revealed a relationship between the pathomorphogenesis of the disease, the clinical picture, and the morpho-functional organization of cells of the gastroenteropancreatic diffuse endocrine system.294-2023, No. 4 (146) Problemy biologii i meditsiny [Problems of Biology and Medicine].Thefirst пsignificant disease causedby these cells is neuroendocrine tumors (NEOS). Due to the factthat cells of the gastroenteropancreati system belong to the APUD-system, such newformationsare commonly referred to as"apudomas", and the term gastrointestinal neuroendocrine tumor has recently been internationally approved. They are relatively rare epithelial neoplasms. The cellular composition of the epithelium of the colon mucosa is heterogeneous depending on the department, which is associated with statistical differences in the frequency of occurrenceof various types of NET. For example, in the cecum andcervix, ascending colon,andnavel colon, neuroendocrine tumors most often develop from EC1 cells that produce serotonin; in the descending colon, sigmoid colon, and rectum , NEOS originate from Lcells that produce a glucagon-like peptide [7]. In 2010, WHO approved, and later,the classification of neuro endocrine tumors of the gastrointestinal tract was revised:1) Grade 1: highlyo differentiated neuro-endocrine tumor; 2)Grade2:highlydifferentiated neuro-endocrine tumor ;

3) Grade3:low-differentiatedneuro-endocrine cancer;

4) Mixed adenoneuroendocrine carcinoma(MANEC);

5) Hyperplastic and precancerous processes [10,11].Clinical manifestations of the initial stages of NEO development are poorly expressed or absent.The NEOEM of the appendix is characterized by a distallocation, the tumor often grows intothe muscle membrane and grows into the surroundingtissue (T3 According to the TNM classification).With the proximallocation of the tumor and its exophytic growth , obturation of the appendixprocess occurs, accompanied by

inflammation of the appendix. Even at the distal position without obturation, symptoms of inflammation occur, which is causedby the overproduction of serotonin by tumor cellsand its effect on the process wall. As a rule, in suchcases, appendectomy is performed for acuteappendicitis, and already intra operatively a tumor of the upper extremity is detected. Very rarely, distant metastases occur in the liver, peritoneum, ovaries, and retroperitoneallymph nodes. Carcinoid syndrome is not always pronounced, and the prognosis is most often favorable[6]. Colon tumors are diagnosed at latestages due to the erased clinical picture, often with routineinstrumental examination. Carcinoid syndrome occurs in less, than 20% of cases, even in the presence of distant metastases. With exophytic growth in the lumen of the large intestinea, obstructive intestinal obstruction occurs, with which patients turn to a specialist who detectsneo examination during the examination. Ultrastructural epithelial changes in patients with colorectal cancer include an increase in the mass of the extra cellular matrix, the appearance ofmyelin like structures, numerous apoptoticcells, and the presenceof mast and plasma cells in the area surrounding the tumor. The division of tumors depends on the degree of its differentiation. Highly differentiated NEOS are characterizedby a trabecular or alveolar structure, the presence offibrous "plaques" between clusters of endocrinocytes. Highly differentiated NEOS of small-cell type are composedoof cells foroundo, oval, elongatedoplasma with a high nuclear-cytoplasmicratio and notclear boundaries. Large cell-type NEOAPconsistsof cells characterized by low nuclear-cytoplasmic ratio and pronounced celle atypia, including distinctnuclear polymorphism. Non-odifferentiated colon O NEOS are similar in structure to low-differentiated adenocarcinomas.Main immunohistochemical markers neuroendocrine tumors of the colonare: serotonin, chromogranin A, substance, and neuron-specific enolase [9, 8, 3]. Another pathology in the development of which endocrine cells are of great importanceis irritable bowel syndromea(IBS). IBS isa chronic disease withrecurrent abdominal pain, flatulence, and intestinal discomfort. The pathogenesis and etiology of the diseaseare insufficiently studied, but the

relationship between the occurrence of pathology and psychoemotionalstress, unbalanced speech, impaired motility and secretion of the gastrointestinal tract, and dysbiosis of this organ has been established. The greatest number of cases is among female patients aged 20-40 years. The clinicalpicture is described in Roman Criteria IV: abdominal pain lasting at least 3 days for a month, for at least 3 months, discomfort subsides after the act of defecation, and the frequency and shape of stool vary.oAccording to a study conducted in 2022 by N. V.Mayym, M. A. Osadchuk, V. O. Burdi Noi and others [2], theresults of biopsyof the sigmoid colon mucosa in patients with different types of IBS indicate that the density of endocrine cells changes in the epithelial lining. Thus, among patients with IBS accompaniedby diarrhea, there statistically significant increase in the number ofва endocrinocytesproducing vaso activein testinal polypeptide (D1-cells), as well as a lower density сомatoof somatostatin secreting cells (D-cells) compared to thecontrol group. In groupswith constipated IBS, there was a decrease in the number of endocrine cells producing vasoactive intestinal polypeptide and an increase in the number of somatostatin-producing cellscompared to the control group[4, 5]."mixed" cells containing both D1-and mucosal granules, as well as D1-and D2-are also isolated.- and L-pellets.In endocrine cells, the following morphological features are present: swelling of mitochondria, the presence of endocrine granules in the Golgi complex, its location near the venom, and expansion of the perinuclear space. In the epithelium, there is a pronounced expansion of intercellular contacts. Some cells are de-granulated, and there are areas of cleavage in the cytoplasm просветления due to a decrease in the number of secreting granulesand the expansion of EPS channels. Cases of endocrinocytes arranged in groups have been recorded, which is not observed in normal aecases. In the depthsof the crypts, rare poorlydifferentiated endocrinocytes with a large nucleus, a highnuclear cytoplasmicratio, polysomes, and rare secretorygranules were found, the number of which stilldoes not allow determining the cell type [1].The significance of cells of the neuroentodermal differentiation variant continues to be studied.In particular, the question of their involvement in the

pathomorphogenesis of inflammatory bowel diseases, such as Crohn's disease and ulcerative colitis, remains unresolved Conclusion. Changes in the morphofunctional organization endocrinecells are an importantcriterion for the development of pathology. Studying the mechanisms of their participation in the formation of the disease isa promising area of pathologicalanatomy.

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