
**MORPHOLOGICAL CHANGES IN
NEUROIMMUNOENDOCRINE CELLS OF THE
SMALL INTESTINE IN THE EARLY POSTNATAL
PERIOD OF LIFE.**

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ABSTRACT: This article is devoted to studying the features of the absorption process and the regulation of homeostasis in the early postnatal period. The material of the study was outbred white rats, which were on different types of feeding. The small intestine with normal microflora affects the adequate adaptation of functional systems of various levels of organization, metabolism, normal structure and function of all organs and systems, the body as a whole.

KEYWORDS: library, PubMed/MEDLINE, ScienceDirect, EBSCO, for the period from 2010 to 2024, which were found using the keywords “Homeostasis, adaptation, microbiocenosis of the small intestine, neuroimmunoendocrine system”.

INTRODUCTION

It is known that natural, mixed or artificial, definitive nutrition involves the supply of nutrients and a huge number of different microorganisms from the external environment to the intestines. As a result, with the formation of normal intestinal microbiocenosis, the genetically determined harmonious development of the individual is ensured. The formation of intestinal microbiocenosis is significantly influenced by childbirth (natural or cesarean section), microbiocenosis of the birth canal, ecology, medications, especially antibiotics, hospital infection, type of feeding, etc. [2,3,10.]. However, to date, existing ideas about the role and significance of intestinal microflora in the formation of the small intestine, its neuroimmunoendocrine formations, the functional system external environment-intestinal microbiocenosis-internal environment of the macroorganism, adaptation and regulation of homeostasis in the process of digestion and absorption are fragmentary and contradictory.

RESULTS

In newborn rats, like children [6,9,11], before feeding, the mucous membrane of the small intestine is not separated from the submucosa; it forms villi of various generations and short sparse crypts between them. The formed finger-shaped villi are lined with highly prismatic epithelium, have homogeneous cytoplasm and a wide, up to 1.0 µm brush border on the apical surface. The goblet cells between them are single, have a characteristic ultrastructure and secretory granules of moderate density in the supranuclear region. Endocrine and neuroreceptor

cells are rarely detected and are at the differentiation stage. Lymphocytes or other leukocytes are not found between the enterocytes of the villi or crypts. In the lamina propria of the mucous membrane under the epithelium, single small groups of cells consisting of clusters of lymphoblasts are detected.

In newborn rats (1-3 days) kept in the natural conditions of a vivarium, due to the minimal development and differentiation of cells of the fundic glands of the stomach, pancreatic acini, low hydrolytic-transport function of columnar epithelial cells of the villi of the small intestine [9], digestion is autolytic and symbiotic, carried out in the intestinal cavity. The insufficiency of mucus production by goblet cells and developing Brunner's glands in the duodenum does not allow practically the implementation of perimembrane and membrane digestion in newborn children and rats [9]. Absorption from the lumen of the jejunum into the cytoplasm of the enterocytes of the villi occurs heterochronically, receptor-mediated endocytosis. This is a perfect mechanism for adaptation of mammals to natural breastfeeding, which occurs 0.5-1.0 hours after birth, naturally due to the cessation of amniotic and placental nutrition in the same receptor-mediated way.

CONCLUSION

Based on the study of the mucous membrane of the small intestine, the formation after birth of symbiotic relationships between macro- and microorganisms, the regular introduction of nutrients and biologically active substrates into the body for the purpose of the harmonious development of the individual, adaptation and homeostasis of the internal environment of the normal structure and function of internal organs and systems naturally formed the internal functional system in evolution environment of the macroorganism - intestinal microbiocenosis - external environment. Feedback from peripheral (in the small intestine) and central neuroimmune systems (hypothalamic-pituitary system), symbiotic relationships of primitive dominant and associations of cavity microsymbiontes, optimal conjugation bond and permitted, sterile membranewaterwood, conjugate with the absorption of villi in enterocytes. the most important thing is the most important - homeostasis of the internal environment of macroorganism , adequate adaptation of functional systems at various levels of organization, metabolism, normal structure and function of all organs and systems, the body as a whole.

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