Morphological Criteria Bronchiectasis Disease

Azamat Musakulovich Norzhigitov	Department of Pathological Anatomy Samarkand State Medical University
Shavkat Eryigitovich Islamov	Department of Pathological Anatomy Samarkand State Medical University

ABSTRACT

The article is devoted to the morphological criteria of bronchiectatic disease in children. The presence of morphological structures characterizing different manifestations of pathology in bronchiectatic disease has been established. At the same time the preservation of the bronchial epithelium structure provides the afferent phase of the immune response of the mucous membrane in inflammatory processes. In particular, the study showed that in inflammatory processes in the lungs associated with bronchiectatic disease, the interaction of immune and endocrine structures in the epithelium is noted.

Keywords: lungs, bronchiectatic disease, children, morphological structures, criteria

Introduction: Congenital anomalies of the bronchopulmonary system are detected in 8-10% of patients with chronic inflammatory lung diseases [2,4]. It was found that only 18.0% of patients had congenital bronchiectasis. At the same time, 38.5% of children were found to be hereditarily predisposed to respiratory diseases [3,5]. There is evidence that chronic pulmonary suppurations subject to surgical treatment in 66% of children are due to congenital lung malformations [1 However, according to some researchers, even with careful differential diagnosis, in 26-53% of cases the cause of bronchiectasis formation cannot be identified, leading to diagnostic errors [6,7].

Objective of the study. To identify characteristic morphological structures in bronchiectatic disease in children.

Material and methods of investigation. Lobes or lung fragments removed during the operation for bronchiectatic disease in 22 children aged from 5 to 12 years were studied. Five to seven pieces were cut from different sections of the operative material, which were fixed in 12% neutral formalin and Buena fluid. After wiring over a battery of alcohols, the material was embedded in paraffin. Sections were stained with hematoxylin and eosin, van Gieson, resorcin-fuchsin according to Weigert. Impregnation of sections with silver nitrate according to Grimelius method (double impregnation) was applied to reveal bronchial endocrine structures (apudocytes).

Results of the study and their discussion. Formation of mucociliary insufficiency is caused by an active inflammatory process in the bronchi, disturbance of bronchial mucosa structure, increased viscosity of bronchial secretion and decreased frequency of beating cilia of the ciliated epithelium**.** In chronic obstruction of the process, desquamation of the epithelium, squamous cell metaplasia, and loss of cilia by ciliated cells are observed.

Chronic process is characterized by migration mainly into submucosal layer of

terminal bronchioles of polymorphonuclear leukocytes (PNL) of neutrophilic type, macrophages, lymphocytes, including CD8+ T-cells, with formation of lymphoid infiltrates surrounding glands. In exacerbation of obstruction, the migration of SNPs into the epithelium and into the own lamina of bronchial mucosa prevails, and in bronchioles with a diameter less than 4 mm, infiltration of the entire wall is observed. Due to the absence of adventitial membrane in bronchioles, inflammation can pass freely to the lung tissue with the development, as a rule, of X-ray-negative micropneumonias. In addition, as the pathology progresses, the percentage of airways containing these same cell elements, as well as CD4- and B-cells, increases significantly. Accumulation of inflammatory cells contributes to an increase in the thickness of small airway walls in patients with pathology and structural changes such as epithelial metaplasia, enlargement of airway smooth muscles, bocalyzed cells, hyperplasia and hypertrophy of submucosal and other components of this thickening glands (Fig.1). In evaluating small airways in lung tissue samples, they showed that the thickness of the epithelium increased by about 100% and the volume of the intrinsic lamina, smooth muscle, and adventitia increased together by 50% in stage III and stage IV compared with stage 0The degree of obstructive airflow rate limitation, studied by measuring forced expiratory volume in the 1st second (FEF1), is related to the thickness of the airway wall.

In addition to structures reflecting manifestations of chronic nonspecific inflammatory process, there were signs of congenital and acquired nature in the lungs of patients. In all

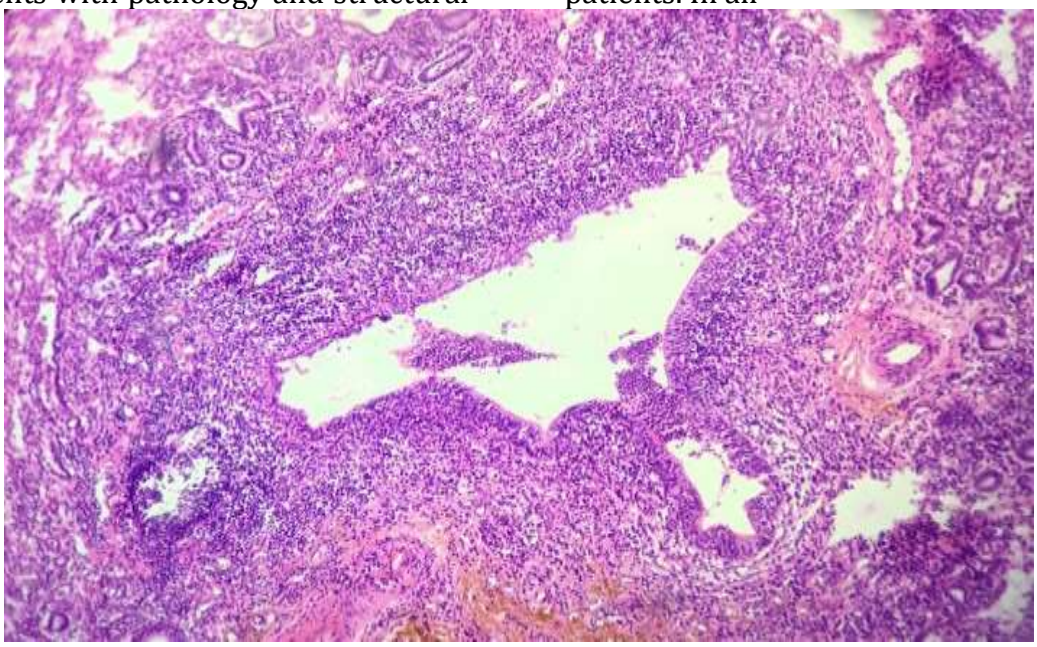

Fig.1. Bronchiectatic disease is characterized by thickening of bronchial walls, increased size of bronchial glands and focal metaplasia of epithelium as well as peribronchial and perivascular sclerosis. Hematoxylin and eosin staining. Ob.40, ca. 10.

In the cases studied, we noted some or other signs indicating the congenital nature of this pathology. Fatty tissue around the large bronchi is often foundIn addition, the presence of irregularly shaped cartilages draws attention, which is also regarded as a congenital malformation. Underdevelopment of the bronchial tree is manifested by a large number of small bronchial tubes in the territory of large bronchiSimilar clusters of small-diameter bronchial tubes can also be seen in the respiratory region. No elastic fibers are detected in these parts of the pulmonary parenchyma. Along with this, the preparations also contain formed pulmonary acini. Constant detection of APUD cells, apudocytes, both single cells and small groups of 2-5 cells, should also be referred to congenital structures [8].

Acquired structures are represented by clusters of lymphoid tissue (BALT), which forms

both diffuse clusters and lymph nodes, in addition there are ubiquitous single lymphocytes, which penetrate the bronchial epithelium. Lymph nodes are located in the peribronchial tissue, often large in size. Many lymph nodes have a reactive center, in some cases it appears empty. The presence of BALTs reflects an increase in immune processes and they are not pronounced in the norm. The destruction of reactive centers apparently occurs due to the "breakdown" of the compensatory role of immune structures.

Conclusions. Consequently, the study allowed us to establish the presence of morphological structures characterizing different manifestations of pathology in bronchiectatic disease. At the same time, preservation of the bronchial epithelium structure ensures the afferent phase of the mucosal immune response in inflammatory processes. In particular, the study showed that in inflammatory processes in the lungs associated with bronchiectatic disease, the interaction of immune and endocrine structures in the epithelium is noted. Because of this, their co-location contributes to the afferent function of lymphocytes.

Literature

1. 1.Bushmelev V.A. Congenital pulmonary malformations in the structure of chronic lung diseases in children (diagnostics and treatment)/ E.V. Sterkhova // Practical Medicine. - 2008. - №7 (31). - C.74-80.
2. 2.Platonova V.A. On the clinical forms of chronic inflammatory lung diseases in pediatric practice. / A.V. Pochivalov, N.A. Fokina // Nauchnye vedomosti. Series Medicine. Pharmacy. - 2011. - № 4 (99). Issue 13. - C.21-23.
3. 3.Skobelev V.A. Local immunity disorders in bronchiectatic disease in children // Modern problems of science and education. - 2005. - №2. - C. 12-30.
4. 4.Khamidova F.M. Lung endocrine structures in ontogenesis and in children with pneumonia//Consilium. - 2015. - №3. - C.36-37.
5. 5.Khamidova F.M. Morphofunctional features of laryngeal endocrine apparatus at experimental laryngitis // Siberian Medical Journal. - 2010. - № 4. - C.26-28.
6. 6.Islamov Sh.E. Subjectivity in defects in medical care // European science review, Vienna, 2018. no. 11-12. P. 95-97.
7. 7.Pasterur M.K. Study of causal factors in patients with bronchiectasis /Helliwell S. M., Houghton S. J. et al. // Am. J. Respir. Crit. Care Med. - 2000. - V. 162, no. 4, Pt 1. - P. 1277-1284.
8. Ilkhomovna, K. M., Eriyigitovich, I. S., & Kadyrovich, K. N. (2020). Morphological Features Of Microvascular Tissue Of The Brain At Hemorrhagic Stroke. The American Journal of Medical Sciences and Pharmaceutical Research, 2(10), 53-59. https://doi.org/10.37547/TAJMSPR/Volume02Issue10-08
9. Ilkhomovna, K. M., Kadyrovich, K. N., & Eriyigitovich, I. S. (2020). Clinical and demographicquality of life for patients with ischemic stroke in Uzbekistan. ACADEMICIA: An International Multidisciplinary Research Journal, 10(10), 883-889.