Medical science of Uzbekistan
Received: 11 October 2024
Accepted: 21 November 2024
Published: 23 December 2024

Published: 23 December 2024
doi.org/10.56121/2181-3612-2024-6-10-14

Article/Original Paper

PATHOMORPHOLOGY OF CHONDROMATOUS HAMARTOMA DEVELOPED IN LUNG TISSUE

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Abstract. The aim of the scientific work. Hamartoma is the most common benign tumor of various organs and is considered a benign tumor arising from non-epithelial mesenchymal tissue, the exact cause of which is still not fully understood. Hamartoma consists of cells developing in any tissue and characteristic of this organ. Endobronchial hamartomas occurring in the lung tissue make up 12-20%. It is characterized by a chondromatous and vascular structure in composition and a nodular appearance during microscopic examination. In this study, it was found that hamartoma of the respiratory tract was morphologically manifested in cases of bleeding by the vascular type. **Materials and methods.** Autopsies, ileum and oral mucosa materials of various forms of myeloblastic leukemia and sepsis were delivered and organized to the center of pathological anatomy of the republic. Of these, 43 male and 26 female materials were received. The prepared pieces are studied morphologically. **Results.** When analyzing the results of the morphological study, it was noted that the hamartoma, which grew from the large bronchi, was located in the endobronchial tissue structures of the bronchi. It was found that chondromatous changes in the chondromatous tissue of the hamartoma occur in the nodes and bronchial wall of the chondroma and have an atypical structure. It was noted that the cytoplasm of chondrocytes is strongly vacuolated. Among the pieces of chondromatous tissue, the appearance of tubercles and cystic structures among bundles consisting of soft tissues of the bronchial wall was detected. **Summary.** It was found that 13.4% of chondromatous hamartomas of the respiratory system are located in the wall of large bronchi, 56.2% in the front segments of the lungs, and the rest in the back segments of the lungs (30.2%). It was found that the hamartoma developed in the wall of the large bronchi consists of multifocal and irregularly located chondromatous tissue nodules, and around them, the soft tissues of the bronchial wall and the mucous membrane have grown in a dysregenerative manner. It was observed that in the hamartoma developed from the bronchi within the lung tissue, chondromatous foci appeared both in the wall of the bronchi and in the alveolar tissue.

Key words: hamartoma, pathomorphology, lung tissue, chondromatosis.

The relevance of research. The first chondromatous hamartoma of the respiratory system was recorded in the world in 1845 by the German doctor German Lebert. Later, the macroscopic and microscopic changes of this tumor were described by Rudolph Virchow in 1863, in 1903 by A.I. Abrikosov described. Due to the widespread practice of thoracic surgery, the detection of lung hamartoma has increased. Currently, hamartomas, which are benign tumors of various organs, account for 60-64% of all benign tumors.

Chondromatous hamartoma of the respiratory system is detected in 20 percent of cases, of which 2-4 times more women than men are found. Endobronchial hamartoma of large bronchi is more common, peripheral lung hamartoma is 3 times more common in the front segments than in the back segments.

A hamartoma actually results from the abnormal proliferation of a single mutated cell in a local tissue. A hamartoma is a benign, slow-growing tumor that proceeds by the spontaneous reproduction of certain mutated cells. Hamartoma occurs in the embryonic period due to a violation of the development of core tissues. Often, hamartoma develops from mesenchymal tissue, with a mixture of fat, fibrosis, fat and blood vessels growing together (5, 6, 7). Chondromatous hamartoma of the lung can often develop from a hyaline tumor and in some cases from an elastic tumor, around which fibrous connective tissue, fat and myxoid tissue grows and surrounds it. Sometimes, smooth muscle cells, lymphoid cells can increase (8, 9). Gaps appear between the pieces of chondromatous tissue and can turn into a cyst.

Material and methods. As a material, the autopsy case, ileum and oral mucosa of patients who died from various forms of acute leukemia, myeloblastic leukemia, and various forms of sepsis were brought to the center of pathological anatomy of the Republic. Of these, 43 male and 26 female materials were obtained. The prepared pieces are studied morphologically.

Discussion and results. In the analysis of the results of the morphological examination, it was observed that the hamartoma grown from the large bronchi is located in the endobronchial tissue structures of the bronchi. In this case, it is determined that the nodules of the chondromatous tissue of the hamartoma, which have changed in the bronchial wall, have an atypical structure, and only morphologically, the chondromatous tissue structures consist of one, two, and many chondrocyte cells that are randomly located and are randomly located (Fig. 1).

It is observed that the cytoplasm of chondrocyte cells is strongly vacuolated. Around the abnormally shaped chondromatous tissue structures, smooth muscle cells characteristic of the bronchial wall tissue structures, unformed connective tissue bundles, single-layer prismatic epithelium covering the mucous membrane of the bronchi were found

to grow. Therefore, it is determined that between the chondromatous tissue pieces, there are gaps and cystic structures between the bundles of soft tissue of the bronchial wall. It is observed that fibroblasts and fibroblasts, which are transformed into stem cells and metaplasia, are surrounded in an elongated shape in the adjacent areas of chondromatous tissue nodes (Fig. 2). These fibrocytic tissue structures are found to form thin and sparse fibrous tissue in association with the surrounding connective, fatty tissue.

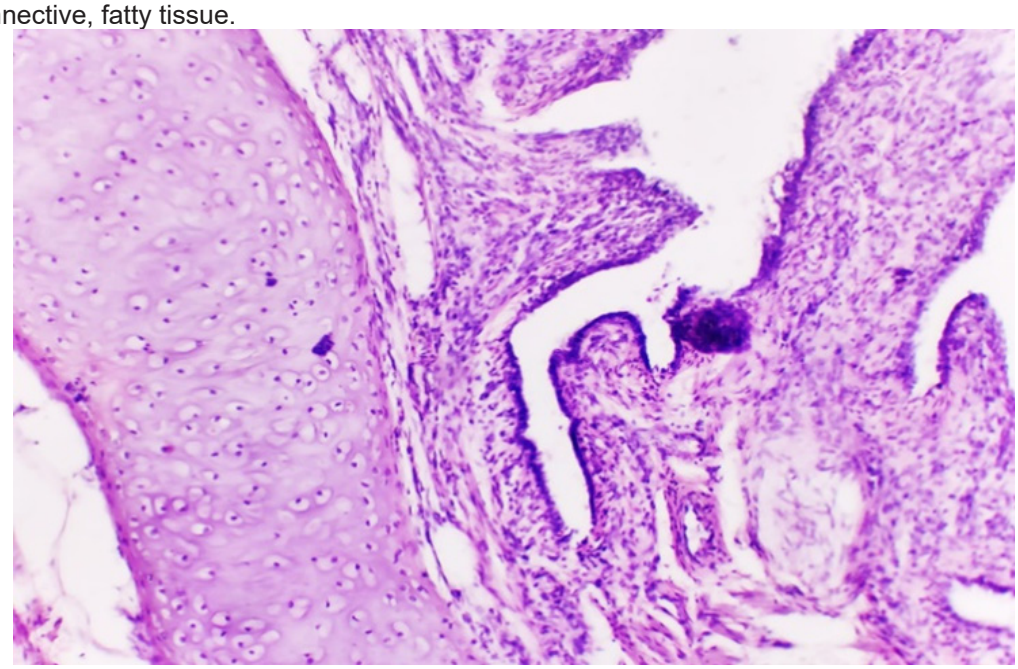

Figure 1. Chondromatous hamartoma of the wall of large bronchi, chondromatous tissue of various forms surrounded by soft tissues characteristic of the bronchial wall. Paint: G-E. Floor: 10x10.

It is determined that the chondromatous hamartoma tissue developed in and around the wall of large bronchi consists of chondromatous structures of different sizes and different shapes. In most cases, it is observed that fibrous fibrous tissue grows around oblong chondromatous nodules, and myxomatous and fatty tissue grows and occupies large areas around them. Among these tissues, there are areas of myxomatous tissue that have turned into adipose tissue and, conversely, areas of adipose tissue that have turned into myxomatous tissue.

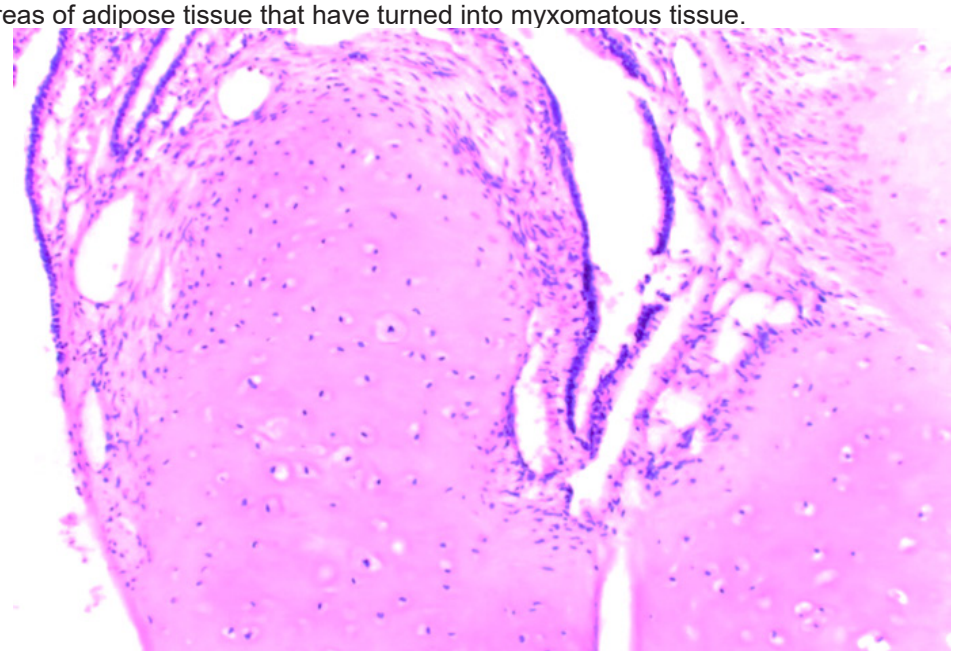

Figure 2. The chondromatous tissue of hamartoma is immediately surrounded by metaplastic fibromatous cells and sparse connective tissue. Paint: G-E. Floor: 10x40.

Microscopic examination of the chondromatous hamartoma developed in the wall of the relatively small bronchi within the lung tissue revealed that the chondromatous tumor tissue formed nodules of various sizes in both the wall of the bronchioles and the alveolar tissue. It is observed that in these chondromatous tissue nodules, stem cells are randomly located and have various levels of cell concentration. Around these nodules of chondromatous tissue, pulmonary alveolar tissue is found to be morphofunctionally dense, forming airless tufts. In some places, it is observed that the alveolar

tissue concentrates and gathers together to form a nodular structure, and in this focus, fibrocytes and fibroblasts of the connective tissue undergo metaplasia into chondrocyte cells (Fig. 3). Rough fibrous connective tissue and fat cells are also found around these tissue structures.

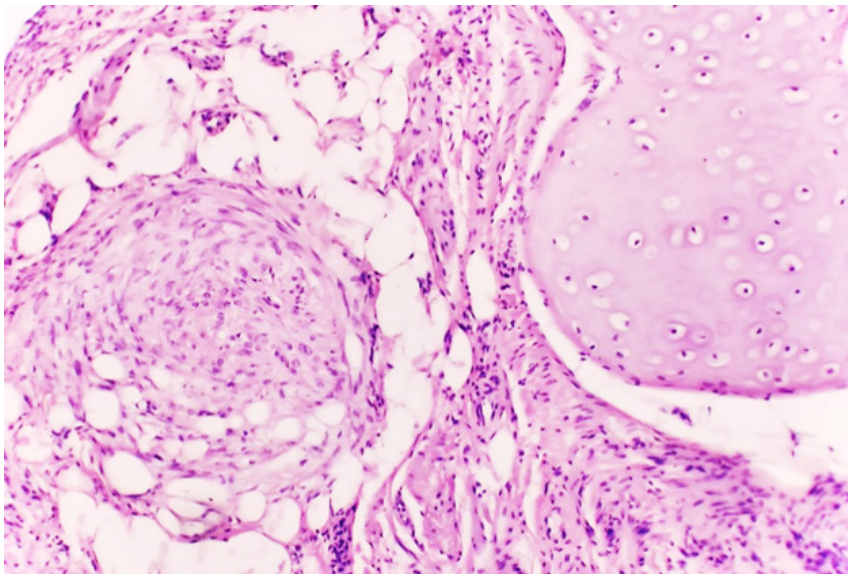

Figure 3. Chondromatous hamartoma around the bronchioles within the lung tissue, with irregular placement of alveolar tissue and metaplasia into chondromatous tissue. Paint: G-E. Floor: 10x10.

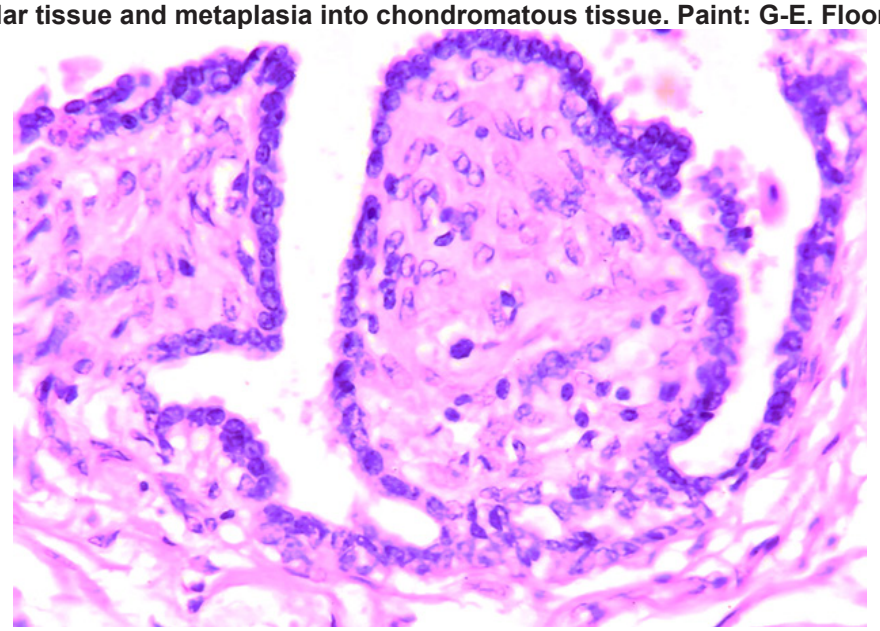

Figure 4. Hamartoma of the wall of the bronchi in the lung tissue, the appearance of suckers in the mucous membrane of the bronchi. Paint: G-E. Floor: 10x40.

It is determined that disregenerative changes have developed in parallel in the soft tissue of the bronchial wall and mucous membrane around the chondromatous hamartoma, which grew from the wall of the bronchioles in the lung tissue. In this case, it is observed that the nuclei of the cylindrical epithelial cells covering the mucous membrane of the bronchi become larger, the size of the cytoplasm decreases, and it becomes prismatic. A private plate of unformed connective tissue under the covering epithelium is found to have proliferated to form papillae of all sizes and shapes (Fig. 4) and contain proliferating young connective tissue cells and lymphoid cells. In the submucosal layer, it is determined that the fibrous tissue, the fibers of which have appeared in rough tufts, and fat cells have also appeared among them.

It is determined that other mesenchymal tissues have grown simultaneously in and around the chondromatrous hamartoma developed in the lung tissue. In particular, it is determined that formed and unformed connective tissue, fat tissue, myxomatous tissue and blood vessels grow from mesenchymal tissue.

It was found that more myxomatous tissue grew around the hamartoma within the lung tissue we studied. It was observed that this myxomatous tissue grew in the bronchial wall, between the lung segments and in the alveolar tissue, and the presence of myxomatous tissue foci consisting of round foci of various sizes and scattered tissue tufts. Myxomatous tissue is found to consist of a histotopographically arranged, stellate-shaped reticular tissue surrounded by areas of edema and myxomatosis (Figure 5). In the center of myxomatous tissue nodules, it is determined that myxoid cells metaplasia into chondrocyte cells.

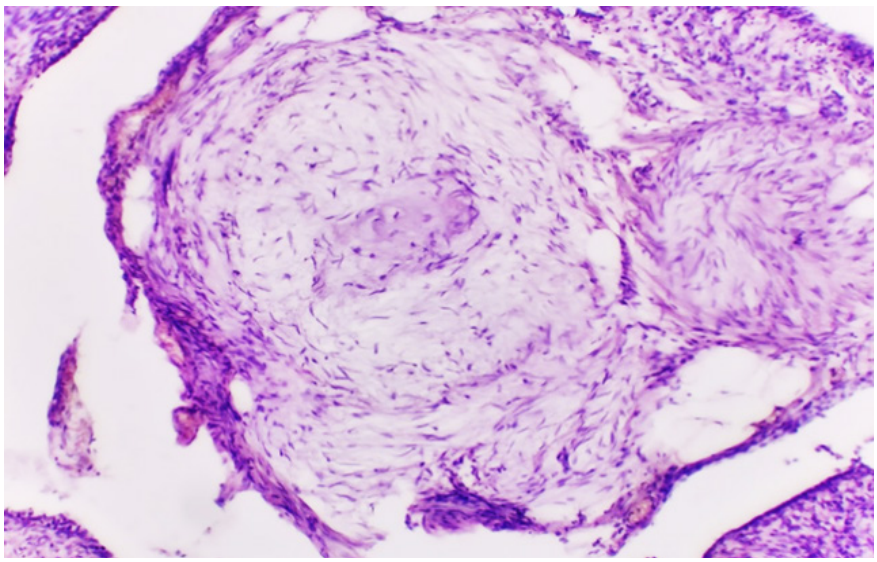

Figure 5. Foci of myxomatous tissue around intra-pulmonary hamartoma. Paint: G-E. Floor: 10x40.

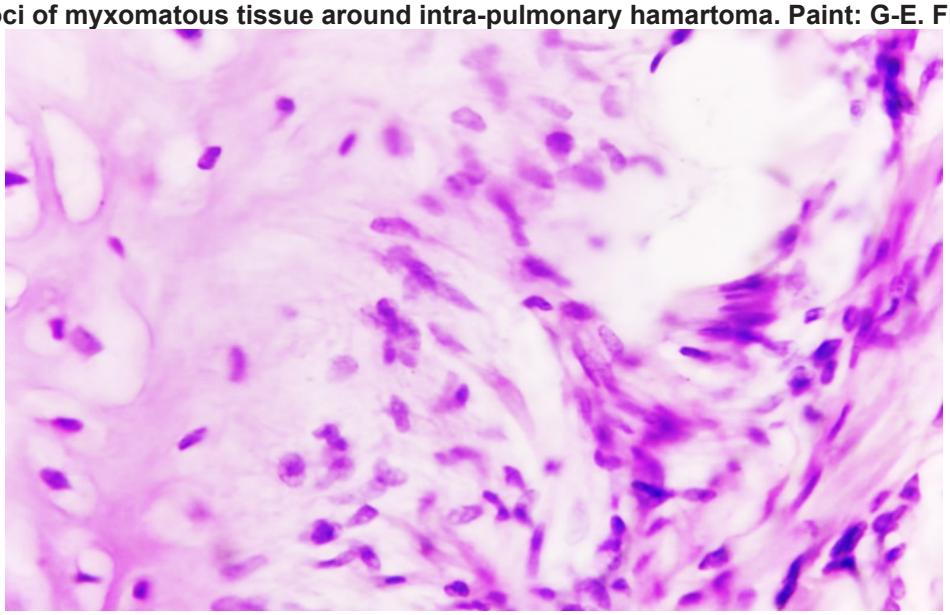

Figure 6. Placement of young chondrocytes and appearance of multinucleated giant cells in the peripheral parts of chondromatous tissue of hamartoma. Paint: G-E. Floor: 10x40.

When the chondromatous hamartoma tissue was studied under a microscope, the following information was revealed, that is, in the structure of the chondromatous tumor tissue, the tumor cells are located in pairs, while in the tumor tissue, individual chondrocytes were randomly located. The nuclei of these chondrocytes are irregularly shaped, and the cytoplasm is strongly swollen. It is determined that chondrocytes are relatively small and densely located in the peripheral parts of the chondromatous tendon tissue, and adjacent to them, elongated fibrocytes and fibroblasts are densely located. In another case, it is observed that poorly developed chondrocytes are densely and randomly located in the peripheral parts of chondromatous ankle tissue, and some of them have become dense with each other and become multinucleated giant cells (Fig. 6).

It is determined that the nuclei of giant cells are elongated and densely located. It is observed that they are surrounded by bundles of coarse fibrous connective tissue. If the thick tissue in chondromatous hamartoma is well-differentiated, it is determined that it is surrounded by dense fibrous tissue and blood vessels. In this case, the presence of hyperchromic connective tissue cells and lymphoid cells in the fibrous tissue is determined. It is observed that blood vessels consist of thin-walled veins.

Summary

It was found that 13.4% of chondromatous hamartomas of the respiratory system are located in the wall of large bronchi, 56.2% in the front segments of the lungs, and the rest in the back segments of the lungs (30.2%).

It was found that the hamartoma developed in the wall of the large bronchi consists of multifocal and irregularly located chondromatous tissue nodules, and around them, the soft tissues of the bronchial wall and the mucous membrane have grown in a dysregenerative manner.

It was observed that in the hamartoma developed from the bronchi within the lung tissue, chondromatous foci appeared both in the wall of the bronchi and in the alveolar tissue.

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