

RARE CASE OF NODULAR LYMPHOID HYPERPLASIA OF LEFT LUNG IN THE PATIENT WITH PREVIOUS PULMONARY TUBERCULOSIS

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Aim: To describe the case of rare benign lymphoproliferative disorder — pulmonary nodular lymphoid hyperplasia in the patient with previous pulmonary tuberculosis. **Materials and Methods:** In the case of pulmonary nodular lymphoid hyperplasia clinical, laboratory, instrumental and morphological examination was performed. **Results:** 44-year-old woman in 7 years after successfully treated infiltrative drug-susceptible tuberculosis of the right lung, was hospitalized with a suspected tumor of the left lung root. The patient underwent left-sided pneumonectomy with lymph nodes dissection. The results of histopathological and immunohistochemical studies evidenced on nodular lymphoid hyperplasia of the left lung. **Conclusion:** Pulmonary nodular lymphoid hyperplasia is a rare lymphoproliferative disorder of the lung with favorable prognosis. For the purpose of differential diagnosis, it is necessary to apply immunohistochemistry.

Key Words: pulmonary nodular lymphoid hyperplasia, previous pulmonary tuberculosis, immunohistochemical method.

Pulmonary nodular lymphoid hyperplasia (NLH) is a rare benign lymphoproliferative disorder of unknown etiology, characterized by the local reactive proliferation of cells of bronchus-associated lymphoid tissue [1–4].

This pathology develops in the pulmonary lymphoid tissue, which consists of bronchus-associated lymphoid tissue, peripheral lymphocytic aggregates, solitary lymphocytes, dendritic cells, Langhans cells, macrophages, and plasma cells [5, 6].

There are three main rare forms of benign pulmonary lymphoid hyperplasia, namely: follicular bronchiolitis, pulmonary NLH and lymphocytic interstitial pneumonia [4–8]. The characteristic morphological feature of NLH is the presence of one or more pulmonary nodules with manifestation of lymphoid tissue proliferation with reactive germinal centers and preserved mantle zones. The disease needs to be differentiated with other lymphoproliferative diseases [1, 4, 5].

In 1963 Salstein described this disease as “pulmonary pseudolymphoma” with benign clinical course [9]. For a long time, the disease existed with this name.

In 1983 Kradin and Mark described this condition with the term “nodular lymphoid hyperplasia” [9, 10]. The book “Histologic Typing of Lung and Pleural Tumors” (World Health Organization) and International Association for the Study of Lung Cancer in 1999 recommended replacing the term “pulmonary pseudolymphoma” with “pulmonary nodular lymphoid hyperplasia” [9].

The term “pulmonary NLH” is used also in the latest, fourth edition of the “WHO Classification of Tumours of the Lung, Pleura, Thymus and Heart (2015)” [11].

Abbondanzo *et al.* [12] in 2000 reported 14 cases of NLH in the files of the Pulmonary Department at the Armed Forces Institute of Pathology from 1974 through 1998. In these observations, women dominated (4:3) at the mean age of 65 years (range 19–80). Most lesions (71%) were incidental findings on routine chest X-rays. In 64% of cases there was a solitary lesion [10, 12]. After surgical treatment none of the patients had clinical recurrence and no patient died of the disease [12]. Also no case showed a molecular rearrangement of the immunoglobulin heavy chain gene or the minor or major breakpoint region of the t(14;18).

Thus, thanks to modern immunohistochemical and molecular genetic methods of pathomorphological diagnosis, NLH is identified as a separate nosological form [1, 9, 12]. Recent studies indicate that pulmonary NLH may belong within the family of IgG4-related sclerosing diseases [4, 7, 13, 14].

In medical literature, many other cases of pulmonary NLH, lymphoproliferative diseases of the lungs, as well as cases of their association with other diseases are described [2, 3, 7, 10, 15–18].

The aim of this study is to present the case of pulmonary NLH in the patient with the history of previous pulmonary tuberculosis (TB).

MATERIALS AND METHODS

The clinical, laboratory, instrumental examination and morphological study of surgical specimens of a 44-year-old woman, in-patient of a specialized hospital with a suspicion of tumor process of the left lung, was conducted. Morphological study of the node of the left lung included macroscopic, standard histological and immunohistochemical study of surgical specimens. Histological specimens were stained by standard hematoxylin and eosin method. Immunohistochemical studies of lymphoproliferative disorders using monoclonal antibodies to CD3, CD5, CD20, CD10, CD68, BCL2, BCL6, Ki-67 anti-

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Abbreviations used: NLH – nodular lymphoid hyperplasia; TB – tuberculosis.

gens, produced by “Dako” (Denmark) for the differential diagnosis, were carried out. Microphotos of samples were performed using photosystem “Leica” (Germany).

RESULTS AND DISCUSSION

We report a case of the disease in a 44-year-old woman, teacher. At the age of 37 she was ill with infiltrative drug-susceptible TB of the right lung.

She received treatment for TB as an in-patient in a specialized hospital with standard anti-TB therapy. The dynamics of curation was good. Denies smoking and history of oncology. After TB was cured, she has felt well. The woman is susceptible to cold.

During the examination of the chest X-ray for a catarrhal disease, tumor formation of the left lung root was revealed (Fig. 1).



Fig. 1. Review X-ray of the chest

The patient was hospitalized in the department of chest surgery, clinical examination and laboratory tests were conducted.

During a computed tomography of the chest the presence of tumor node root of the left lung was verified and the sequelae of TB of the right lung were revealed (Fig. 2).

On videobronchoscopy, the cancer of the left superior lobar bronchus was suspected with transition to the left main bronchus. In study of sputum and smears from bronchi, no atypical cells or mycobacteria TB were detected. Laboratory tests did not detect abnormalities. On ultrasonography of internal organs pathological changes were not revealed.

The patient had surgery, the extent of operation was left-sided pneumonectomy with lymph nodes dissection of left lung root.

Under intraoperative revision of left lung root a solid, bumpy, spherical tumor node 8×7×6 cm that invades distal section pulmonary artery was revealed. On section, the node tissue was dense, gray-white, homogeneous. Microscopic study of the surgical specimens revealed pronounced lymphoid infiltration, which formed lymph follicles with reactive germinal centres and interphollicular fibrosis (Fig. 3, 4).

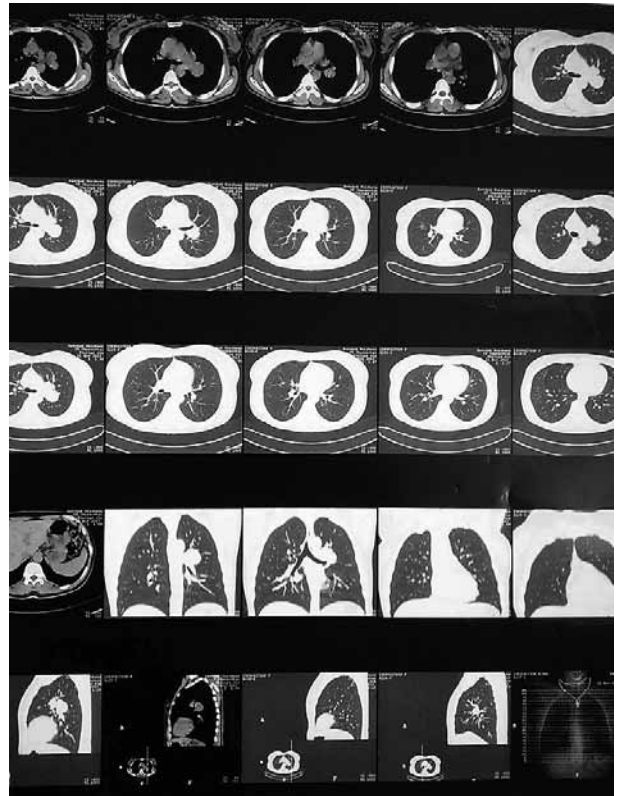


Fig. 2. Computed tomography of the chest

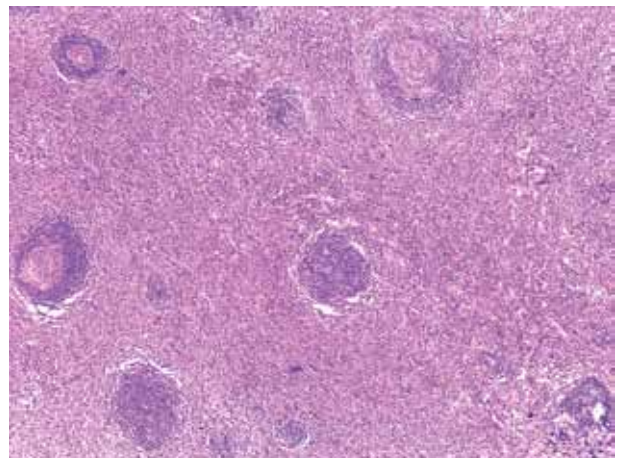


Fig. 3. Nodular lymphoid hyperplasia and the sequelae of TB of the left lung. Hematoxylin and eosin, ×40

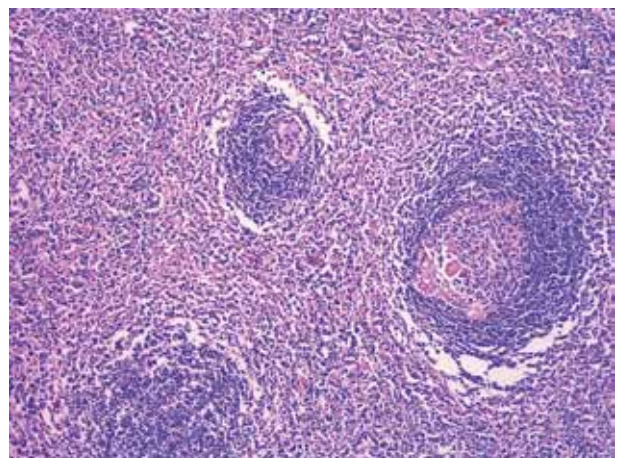


Fig. 4. Microscopic picture of the node of the left lung. Hematoxylin and eosin, ×100

Histologically in isolated lymph nodes, follicular hyperplasia has been detected. The cell population was represented by round lymphoid cells of medium to small size. Chromatin was fine-grained, cytoplasm volume was very small. Mitotic activity was low. Necrosis was not observed.

The microscopic pattern of surgical specimens indicated a lymphoproliferative disease of the left lung. For the purpose of differential diagnosis, an immunohistochemical study was performed.

On immunohistochemical we found membrane expression of CD20 antigen on B-lymphocytes of the lymphoid follicles (Fig. 5), membrane expression of CD3 antigen on T-lymphocytes (Fig. 6), located diffusely outside the follicles, and a negative reaction to BCL2 in CD20⁺ B cells of the follicle centers (Fig. 7). In germinal centers of lymphoid follicles positive staining for CD20 (B cell marker) and negative for BCL2 were revealed. BCL2 expression was stated on mantle zone B-cell. Interfollicular area shows a polyclonal population of lymphocytes.

Such results of histopathological and immunohistochemical studies represent reactive polyclonal proliferation of lymphoid tissue and substantiate the diagnosis NLH of the left lung. A year later the patient feels good, has no complaints, works as a teacher in high school.

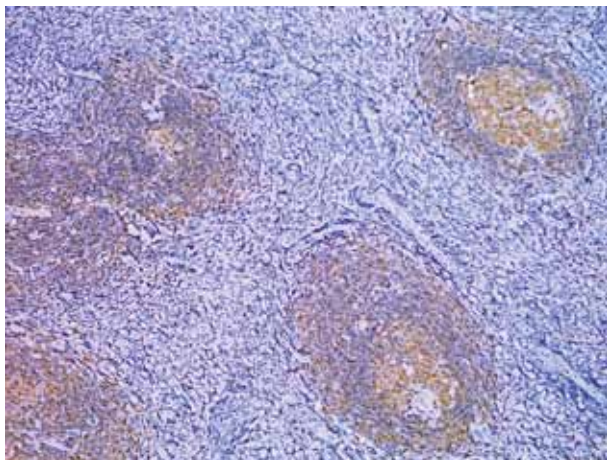


Fig. 5. Membrane expression of CD20 antigen on B-lymphocytes of the lymphoid follicles, $\times 100$

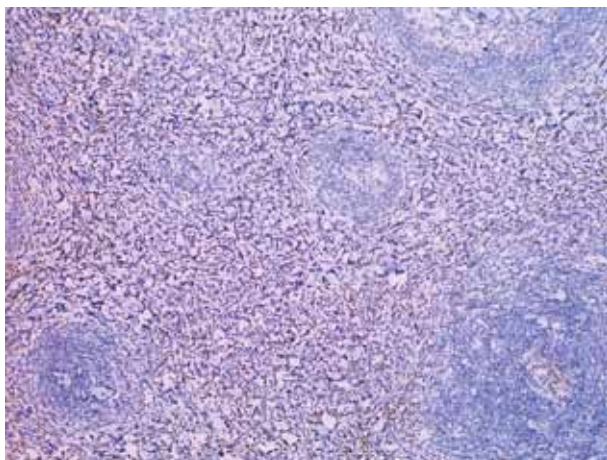


Fig. 6. Membrane expression of CD3 antigen on T-lymphocytes, $\times 100$

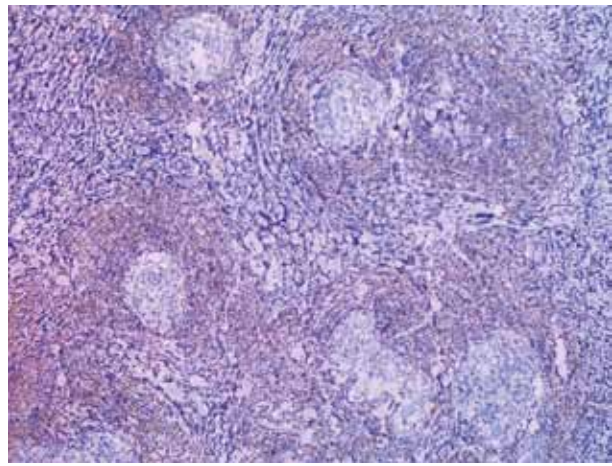


Fig. 7. Expression of BCL2 in CD20⁺ mantle zone B-lymphocytes and T-lymphocytes. Negative reaction to BCL2 on B-cells of lymphoid follicle centers, $\times 100$

In this report we described a case of NLH of the left lung in 44-year-old woman in 7 years after successfully treated infiltrative drug-susceptible TB of the right lung. The other authors describes similar cases of a combination of lymphoproliferative diseases of the lungs with TB and other diseases [10, 18].

In our case, previous pulmonary TB may be a favorable background for the development of NLH, which should be taken into account during dispensary supervision of such patients. NLH is a rare lymphoproliferative disorder of the lung with favorable prognosis. For the purpose of differential diagnosis, it is necessary to apply an immunohistochemistry method.

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