Received: 10 February 2022 / Accepted: 24 June 2022 / Published online: 30 June 2022

DOI 10.34689/SH.2021.24.3.026

УДК 616.24-002-053.5

CLINICAL CASE OF DIFFICULTY IN THE DIAGNOSIS OF PULMONARY SARCOIDOSIS IN ADOLESCENTS

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Abstract

Relevance: Currently, there is an increase in the incidence and prevalence of sarcoidosis worldwide. This pathology has a variable course and damage to relatively young people all over the world. The disease is extremely heterogeneous with an unpredictable clinical course.

Objective. To study the diagnostic significance of CD68 immunophenotyping based on lung biopsy materials in pulmonary sarcoidosis.

Materials and methods: The article included the interesting clinical example, in which the diagnosis was difficult in spite of sufficient illustration of the stages of pulmonary sarcoidosis course.

Conclusion: The obtained data of morphological and immunohistochemical studies have practical interest in cases of difficulty in the differential diagnosis of lung tuberculosis and sarcoidosis in order to clinical diagnosis verification.

***Keywords**: sarcoidosis, differential diagnosis, granulomatosis, morphology, immunology.*

Резюме

СЛОЖНОСТИ ДИАГНОСТИКИ САРКОИДОЗА ЛЕГКИХ У ПОДРОСТКОВ. КЛИНИЧЕСКИЙ СЛУЧАЙ

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Актуальность: В настоящее время во всем мире наблюдается рост заболеваемости и распространенности саркоидоза. Саркоидоз - это системное гранулематозное заболевание легких неизвестного происхождения, одна из актуальных проблем современной медицины, проявляющейся поражением различных органов и систем, вариабельным течением и поражением относительно молодых людей во всем мире. Болезнь чрезвычайно гетерогенна с непредсказуемым клиническим течением.

Цель: Изучить диагностическую значимость CD68-иммунофенотипирования по материалам биопсии легких при саркоидозе легких.

Материалы и методы: Приведен интересный клинический пример, в котором, при достаточной иллюстрации этапов течения саркоидоза легких постановка диагноза была затруднена.

Выводы: Полученные данные морфологических и иммуно-гистохимических исследований представляют практический интерес в случаях трудности дифференциальной диагностики туберкулеза и саркоидоза легких с целью верификации клинического диагноза.

***Ключевые слова**: саркоидоз, дифференциальная диагностика, гранулематоз, морфология, иммунология.*

Түйіндеме

КЛИНИКАЛЫҚ ЖАҒДАЙ ЖАСӨСПІРІМДЕРДЕГІ ӨКПЕ САРКОИДОЗЫН ДИАГНОСТИКАЛАУДАҒЫ ҚИЫНДЫҚТАР

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Өзектілігі: Қазіргі уақытта бүкіл әлемде саркоидоздың таралуы мен таралуы байқалады. Саркоидоз-бұл белгісіз шығу тегі бар жүйелі грануломатозды өкпе ауруы, қазіргі медицинаның өзекті мәселелерінің бірі, әртүрлі органдар мен жүйелердің зақымдалуымен, өзгермелі ағыммен және бүкіл әлемдегі жас адамдардың зақымдалуымен көрінеді. Ауру күтпеген клиникалық ағыммен өте гетерогенді.

Мақсаты. Өкпенің саркоидозындағы өкпе биопсиясының материалдары бойынша CD68-иммунофенотиптеудің диагностикалық маңыздылығын зерттеу.

Әдістер мен құралдар: Қызықты клиникалық мысал келтірілген, онда өкпе саркоидозының кезеңдерін жеткілікті суреттеу арқылы диагноз қою қиын болды.

Қорытынды: Морфологиялық және иммуногистохимиялық зерттеулерден алынған деректер клиникалық диагнозды верификациялау мақсатында өкпе туберкулезі мен саркоидозын дифференциалды диагностикалау қиын болған жағдайларда практикалық қызығушылық тудырады

Түйінді сөздер: *саркоидоз, дифференциалды диагностика, гранулематоз, морфология, иммунология.*

Библиографическая ссылка:

Tussupbekova M.M., Stabayeva L.M., Ibraimov B.A., Bakenova R.A., Imanbayeva G.N., Nygyzbayeva R.Zh. Clinical case of difficulty in the diagnosis of pulmonary sarcoidosis in adolescents // *Nauka i Zdravookhranenie* [Science & Healthcare]. 2022, (Vol.24) 3, pp. 227-230. *doi 10.34689/SH.2022.24.3.026*

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Relevance

The great number of diagnostic difficulties in differential diagnosis stipulates for a wide range of clinical manifestations in disseminated lung pathology, both in the early stages of the disease, when there are minimal clinical and morphological manifestations, and in the later stages – with fibrosis of the lung tissue [1,4,5]. The clinical features of sarcoidosis are manifold, and the lack of specific diagnostic tests makes non-invasive diagnosis difficult [7]. Late diagnosis of granulomatosis in patients with sarcoidosis makes the prognosis unfavorable, especially at the stage of irreversible fibrotic changes [2,3,6].

Objective. To study the diagnostic significance of CD68 immunophenotyping based on lung biopsy materials in pulmonary sarcoidosis.

Clinical case.

Patient D., female, was born in 2004. It is known from the anamnesis that the patient grew up as a healthy child. The girl was born from the 2nd urgent birth, weighing 2700 g, height 50 cm. She was on artificial feeding, the complementary foods realized according to age and to plan. The mother had a burdened obstetric history: edema of pregnant women, hypertension, hypertensive type of vegetative-vascular dystonia, obesity of 3-4 grade. On the examination moment, the patient lived in the industrial region of the Republic of Kazakhstan (in Temirtau). Allergic anamnesis: allergic reaction for honey and citrus fruits. Pneumonia in 2017, the patient didn't know the localization of pneumonia. After treatment for pneumonia, coughing remained.

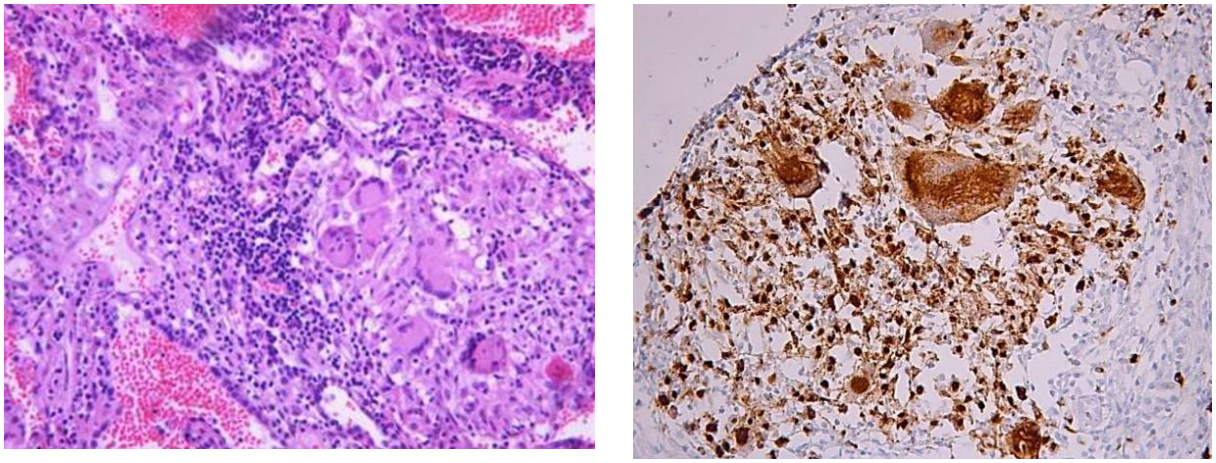
The pathological process in the upper right lobe was detected on fluorography during a medical examination for admission to an educational institution in August 2020. In order to exclude pulmonary tuberculosis, the patient was examined by a phthisiatrician, which ruled out the tuberculous process in the lungs on the basis of negative results of sputum analysis on GeneXpert and Diaskin test. The patient was examined privately at the Institute of

Surgery. CT-examination of the thoracic segment from November 24, 2020 revealed a CT-picture of a cavity with a horizontal fluid level, probably a congenital cyst, air-containing cavities in the right lung, reticular changes in the interstitium of the right lung, bullous emphysema.

The patient underwent the upper lobectomy on the right lung after the diagnosis of complicated cystic hypoplasia of the upper lobe on the right. The patient was discharged from hospital in satisfactory condition. The pathological and histological conclusion from12/07/2020: the morphological picture corresponds to miliary tuberculosis of the upper lobe of the right lung, which developed against the background of cystic hypoplasia.

Monitoring and treatment in an anti-tuberculosis hospital was recommended. The patient was examined again at the TB dispensary at the place of residence. Data for the tuberculous process were not identified again (repeated GeneXpert, Diaskin test). The requested bipose material was re-examined in the conditions of the pathomorphological laboratory of the Department of Pathology of the Karaganda Medical University.

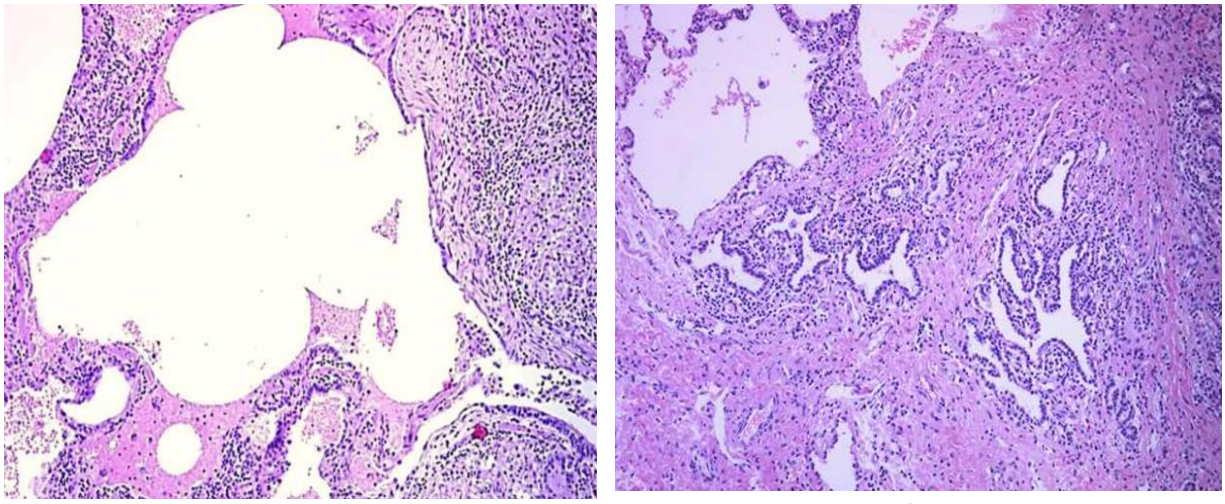
Repeated histological examination revealed fragments of lung tissue with normal histostructure. “Stamped” granulomatous structures of caseless centers revealed in most histological sections, a significant number of macrophages were located on the periphery of the granuloma, and giant multinucleated cells of bizarre shapes with many nuclei in different directions located along the cytoplasm of the cell or in the form of a “scattering of coins” were found in the central part (figure 1 a). Granulomas were mainly localized in the peribronchial zones, in the bronchial wall and in the perivascular zones.



a **b**

Figure 1. Lymphoid-giant cell granulomas with cells of the Pirogov-Langhans type (a). Staining: hematoxylin and eosin. IHC – expression of CD68 in granuloma cells (b). Magnification: a x400; b x100.

The survey study of the lung tissue showed the areas of atelectasis and emphysema with ruptures of interalveolar septa with the formation of giant air cavities of the “bull” type (figure 2 a). In other areas, thickening of the interalveolar septa was observed due to the formation of small granulomas, among them with giant cells, zones of vascularization and angiosclerosis were obtained in the form of thickening of the vascular walls, plethora of blood vessels of the parenchyma and capillaries of the alveolar lining, there were foci and multiple diapedeses.



a **b**

Figure 2. Bizarre bronchiectasis structures against the background of fibrosis and bullous formations (a); in the lumen of the bronchi – exudate, metaplasia of the epithelium, fibrosed wall of the cavity formation, cysts (b). Staining: hematoxylin and eosin. Magnification: a x100; b x400;

In some areas of the pulmonary parenchyma, elements of bronchopulmonary dysplasia were revealed against the background of gross sclerotic changes with the phenomenon of hyalinosis, where generations of bronchi, bronchioles and very small bronchioles of bizarre shapes with scalloped lumen close to each other in places were detected, the lumen of many was deformed, which didn't exclude the possibility of the presence of congenital bronchopulmonary dysplasia and cystic transformation of the lung (figure 2 b).

Immunohistochemical staining of lung tissue using antibodies against CD68 in the lung stroma revealed a high degree of CD68expression, represented by clearly delineated CD68 positive cells. They were found in the lumen of the alveoli to a lesser degree. It was established that CD68 positive cells were localized mainly in the structure of the granuloma, so they had a locoregional specificity of location (figure 1 b).

Conclusion: Lung sarcoidosis at the stage of formation of epithelioid-cellular and macrophage granulomas. Focal pneumosclerosis with the phenomenon of hyalinosis, the formation of bronchiectatic structures, bullous emphysema and atelectasis. Chronic bronchitis.

Subsequently, the patient was consulted by the pulmonologist of the Medical Centre Hospital of President's Affairs Administration of The Republic of Kazakhstan. Objective examination: t 37^0 C. General condition was satisfactory. Asthenic type of constitution.

According to the data of laboratory indicators of inflammatory process activity, no significant pathology was revealed. The study of spirometric parameters, diffusion capacity of the lungs revealed a violation of pulmonary ventilation of the obstructive type of moderate to severe degree. Moderate decrease in forced vital capacity of the lungs = 50% of the due. The decrease in the diffusion capacity of the lungs had moderate degree (hemoglobin 126 g/l – DLco=59%). The final diagnosis was the following: Sarcoidosis, II degree. Chronic non-obstructive bronchitis in remission. Condition was after upper lobectomy on the right lung for cystic hypoplasia of the lungs complicated by the inflammatory process (from 11/25/2020). Respiratory failure – 0.

The revealed violations of the histostructure of the bronchi, bronchioles of various generations of bizarre forms against the background of gross sclerotic changes with the phenomenon of hyalinosis, can be assessed as a pathology in the form of congenital bronchopulmonary dysplasia with cystic transformation of the lung due to which the patient underwent lobectomy, and morphological examination revealed granulomatous the structures were erroneously assessed by the morphologist as miliary tuberculous process.

Conclusion. In this clinical case, the fact of accidental diagnosis of sarcoidosis when applying for pathology is once again confirmed. However, the integrated approach and additional immunohistochemical study using antibodies against CD68 allowed to verify the clinical diagnosis between sarcoidosis and pulmonary tuberculosis and to make the correct final diagnosis of pulmonary sarcoidosis, while avoiding unreasonable prescription of anti-tuberculosis drugs.

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