

Modern Diagnosis and Morphological Changes in Pulmonary Sarcoidosis

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Annotation: Sarcoidosis is a systemic granulomatous lung disease of unknown aetiology, which is characterised by the involvement of different organ systems, variable disease course affecting young people and possessing an important issue in the modern world. The study involved 61 patients aged 26 to 65 years. The analysis of radiological manifestations of sarcoidosis was evaluated by the main indicators (symmetry of the lesion, size of the intra-thoracic lymph nodes, the presence of dissemination, pneumofibrosis). The components of the cellular elements of the inflammatory infiltrate did not differ at different stages of sarcoidosis. Late diagnosis and lack of correct therapy make prognosis in patients with lung sarcoidosis unfavourable.

Keywords: sarcoidosis, diagnosis, granulomatous lung, radiological manifestations.

Relevance. Currently incidence and prevalence of sarcoidosis are increasing. Sarcoidosis is a systemic granulomatous lung disease of unknown aetiology, which is characterised by the involvement of different organ systems, variable disease course affecting young people and possessing an important issue in the modern world [1, 7]. The disease is extremely heterogeneous with an unpredictable clinical course. Interesting clinical cases are described in which, with a sufficient illustration of the stages of the course and diagnosis of sarcoidosis of the lungs and peripheral lymph nodes, the diagnosis was difficult [3, 11]. Late diagnosis and lack of correct therapy make prognosis in patients with lung sarcoidosis unfavourable.. Radiation imaging techniques play an important role not only in diagnosis, but also in assessing the clinical course and outcomes of ODS, as well as deciding on therapeutic tactics in the treatment of the patient [2] Phase I sarkaidosis is associated with tuberculosis and lung diseases. Considering the introduction of histological methods in the diagnosis of sarcoidosis and the expansion of the possibilities of radiative research methods through computed tomography (CT), there is a need to look for new approaches to the classification of sarkaidosis to determine the patient management algorithm[13,19]. In recent years, several scientific works have appeared on the evaluation of morphological indicators and their compatibility with radiological signs of sarkaidosis [8, 20]. The median age of patients at the onset of the disease was 38 years. In the distribution of patients by radiological stages, J. Modified by Skadding and recommended by the 2014 Federal consensus clinical guidelines. Stages under the Wurm classification: 0-No changes in chest X-ray (pulmonary sarcoidosis); Stage I-VLN lymphadenopathy, pulmonary parenchyma unmodified; Stage II-lymphadenopathy of the upper lymph nodes, pulmonary parenchyma pathological changes; Stage III-pathology of pulmonary parenchyma without VLN lymphadenopathy, Stage IV-irreversible pulmonary fibrosis. To conduct a morphometric study with the determination of the cellular composition of granulomas for the differential diagnosis of morphogenesis of granulomas in sarcoidosis and pulmonary tuberculosis [13, 17].

Materials and methods. All patients with a pathomorphological examination, a videotoracoscopy were performed with a targeted biopsy of the affected area of the lung and intraocular lymph nodes. An analysis of transthoracic biopsy of 83 patients with a verified diagnosis of sarcoidosis of the lungs and disseminated form of pulmonary tuberculosis was carried out. The resulting lung tissue material was carried out according to the standard histological method; conducted morphometric analysis. The diagnosis of sarkaidosis in all patients is histologically confirmed. Histological examination studies the quantitative composition of the biopsy sample. In accordance with the generally accepted method of visual microscopy, the total number of cells was calculated in 10 visual fields at 100X magnification. In visual fields, the number of granulomas, large cells, macrophages, lymphocytes, neutrophils and eosinophils was studied. Studies its other morphological composition in biopsy samples. In accordance with the generally accepted method of visual microscopy, the total number of cells was calculated at 100X magnification over 10 fields of view. In visual fields, the number of granulomas, large cells, macrophages, lymphocytes, neutrophils and eosinophils was studied. The presence of other morphological formations in biopsy samples was qualitatively assessed: hyalinosis, Shauman bodies, necrosis, stamping, calcification, fibrosis and vasculitis. Calcification and vasculitis are very rare in biopsy samples - 2/121 (1.7%) cases, no fibrosis was detected in any case, and therefore the parameters listed in subsequent calculations were not taken into account. Statistical data processing Statistica 10 program statistical calculations include linear Spearman correlation analysis, Association analysis, and Intergroup difference analysis. According to the literature, stage 0 incidence is 8-16% and Stage IV is about 5%. Acute sarcoidosis in the form of the Lefgren symptom complex has been reported in 10 of 60 patients (6.3%)... In most cases, the disease was primarily in the chronic stage.

Results and conclusions. Sarcoid granulomas are characterised by an increase in lymphocytes, indicating the immune character of the lesion, an increase in fibroblasts, fibrocytes, and signs of activation of angiogenesis. While for TB granuloma an increase in the number of granulocytes and epithelioid cells is characteristic. These morphological criteria for the diagnosis of sarcoidosis of the lungs and lymph nodes are necessary for use in the practice of pathologists to verify the clinical diagnosis. Phase I patients were diagnosed with a single calcification of the lungs and several lesions with "ground glass" zones. In patients with Stage II and III, focal shadows were detected against the background of interstitial changes. With the development of the disease, the foci were combined with the formation of conglomerates of soft tissues and the development of local fibrosis. No ground glass zones have been recorded in Phase III. At variable frequencies, pleural sheaths were observed in all radiographic stages. . X-ray changes detected in the lungs and lymph nodes in stages I and II of the disease are mostly bilateral, with asymmetry of the injury observed in Stage III. A comparison of morphological examination data was carried out at different radiological stages of sarkaidosis (Table 2). In general, the cellular composition of inflammation did not differ in infiltrate at different stages of sarkaidosis and was expressed by lymphocytes, macrophages, giant cells, neutrophils and, more rarely, eosinophils, which corresponds to literature data. However, as the stage became more severe, the number of granulomas increased, as evidenced by the direct correlation between the number of granulomas in the biopsy sample and the Radiological stage (R = 0.24; p < 0.05). In addition, with the intensification of the Radiological stage, the susceptibility of granulomas to necrosis increases (R = 0.39; p < 0.05). With sarcoidosis, the development of Central necrosis is observed in 35% of cases. However, neutrophils can be detected at the beginning of the appearance of necrosis; ischemic necrosis can develop when the cavity of the vein is closed with granulomas. Developed morphological and morphometric criteria for the differential diagnosis of sarcoidosis and pulmonary tuberculosis must be used in the practice of a pathologist to verify the clinical diagnosis, which will determine the adequate tactics of examination, administration, correction of the disease, and evaluation of the prognosis of the disease, taking into account identified clinical and laboratory data, results of instrumental research methods.

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