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COMPARATIVE CHARACTERISTICS OF DISTURBANCE OF THE REGIONAL BLOOD FLOW IN RESPIRATORY ORGANS OF PATIENTS WITH SARCOIDOSIS ACCORDING TO RADIOLOGICAL AND RADIOISOTOPE DATA

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СРАВНИТЕЛЬНАЯ ХАРАКТЕРИСТИКА НАРУШЕНИЯ РЕГИОНАЛЬНОГО КРОВОТОКА У БОЛЬНЫХ САРКОИДОЗОМ ОРГАНОВ ДЫХАНИЯ ПО ДАННЫМ РЕНТГЕНОЛОГИЧЕСКОГО И РАДИОИЗОТОПНОГО МЕТОДОВ ИССЛЕДОВАНИЯ

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РЕЗЮМЕ

С помощью радионуклидного метода (сцинтиграфия лёгких) обследован 121 больной с саркоидозом органов дыхания. Все пациенты были разделены на две группы. В первую группу вошли 62 впервые выявленных больных саркоидозом органов дыхания. Вторую группу составили 59 пациентов, страдающих рецидивирующим саркоидозом органов дыхания. Цель: изучение локализации, распространенности и степени активности процесса в лёгких. Исследование показало, что радионуклидные методы существенно дополняют и расширяют представление о клинико-рентгенологических изменениях не только в зоне основного поражения, но и в других участках легких. Сцинтиграфия лёгких имеет весьма важное дополнительное клинико-диагностическое значение и играет значительную роль при выборе режима лечения.

ВИЗНАЧЕННЯ СТАНУ РЕГІОНАРНОГО КРОВОТОКУ ЛЕГЕНІВ У ХВОРИХ НА РЕЦИДИВУЮЧИЙ САРКОЇДОЗ ОРГАНІВ ДИХАННЯ ЗА ДОПОМОГОЮ РАДІОНУКЛІДІВ

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РЕЗЮМЕ

За допомогою радіонуклідного методу (сцинтиграфія легенів) обстежено 121 хворого на саркоїдоз органів дихання. Всі пацієнти були розподілені на дві групи. У першу групу увійшли 62 вперше виявлених хворих на саркоїдоз органів дихання. Другу групу склали 59 пацієнтів, які страждають на рецидивуючий саркоїдоз органів дихання. Мета: вивчення локалізації, поширеності і ступеня активності процесу в легенях. Дослідження показало, що радіонуклідні методи суттєво доповнюють і розширюють уявлення щодо клініко-рентгенологічних змін не тільки в зоні основного ураження, але й в інших ділянках легенів. Сцинтиграфія легенів має дуже важливе додаткове клініко-діагностичне значення і відіграє значну роль при виборі режиму лікування.

Key words: sarcoidosis, lungs, radionuclides, regional blood flow.

In recent years, a steady growth of morbidity caused by sarcoidosis is observed, with annual increase of the patients' number by 1.9% in the world. A similar situation becomes perceptible in Ukraine [1]. Frequency of sarcoidosis cases in Ukraine is 10 per 100 thousands of population, the greatest quantity of cases is registered in the northern and western regions. Sarcoidosis affects persons of both sexes at the age of 20-40 years; women have this disease more often [2, 3].

At the basis of sarcoidosis pathogenesis of respiratory organs complex interactions of lymphocytes and the alveolar macrophages leading to formation of granulomas in the injured organs and tissues, with the subsequent transformation of epithelioid-cellular granulomas in an interstitial fibrosis. The specified changes can proceed without the expressed clinical implications or with the changes, which are not pathognomonic for this disease [4-6]. Therefore early

revealing of this disease and the prevention of development of fibrosis of lung tissue is connected only with perfection of its diagnostics.

Clinical-radiological, functional methods of research, US-diagnostics and computer tomography of lungs do not always allow diagnosing in full available changes, both in a lung parenchyma, and in lymph nodes of a mediastinum [7]. The authentic diagnosis manages to be positioned only on the basis of histological research of biopsy material [8-10]. However, more often the lesion of lungs occupies considerably the big space, than it is found by the traditional methods listed above. That is why an important role has radionuclide research. It is possible to reveal authentically localization with its help, prevalence and a degree of activity of pathological process in a lung parenchyma [11]. It allows receiving the objective information on character of morphological and functional disturbances in a system of

microcirculation of lungs and the most important thing to provide adequate control of treatment of patients with sarcoidosis.

Disturbance of hemodynamic of a small circle of circulation, ventilating ability of lungs in respiratory organs of patients with sarcoidosis for many years draws the special attention of various experts in the field of pulmonology and phthisiology. In this connection, for studying of a pulmonary blood flow, there was a necessity for application of additional researches among which it is used a radionuclide method with use of marked elements [12].

Radionuclide diagnostics of respiratory organs is an instrumental method and based on achievements of medical metrology, clinical biophysics, radiopharmacokinetics, nuclear electronics, computer techniques and medical cybernetics. In medical practice radionuclide, researches of lungs «in vivo» both in statics, and in dynamics used [13, 14].

The purpose of our research was the substantiation of expediency of radionuclide methods application in diagnostics of sarcoidosis of respiratory organs taking into account of used methods of treatment.

MATERIALS AND METHODS

There were 121 patients with various forms of sarcoidosis of respiratory organs under observation. Patients were on treatment in a specialized hospital of Central Scientific-Research Institute of tuberculosis of the Russian Academy of Medical Science.

All patients are divided into 2 groups. 62 patients with sarcoidosis of respiratory organs for the first time

revealed in the first group have entered. 59 patients suffering by a relapsing sarcoidosis of respiratory organs compounded the second group.

The standard methods of patients' examination suffering by diseases of respiratory organs in the work used.

The special attention is given to complex radionuclide research. It was studied regional blood flow of lungs with data registration on scintillated gamma-chamber «Sigma – 410» of the firm «Siemens». Researches made in two stages – before the beginning of therapy and after the finishing.

RFP MAA Tc-99m was used for research of regional blood flow. Introduced RFP carried out time micro-embolism of capillaries. The image was in the form of scintillations on the screen of an oscilloscope of the gamma-chamber. Each lung empirically divided on three equal «regions». The quantity of impulses from all «regions» of lungs summarized. Functional changes of each «region» of both lungs estimated on «deficiency» of accumulation of RFP.

RESULTS

We carry out the comparative analysis of prevalence of pathological changes according to radiological and radionuclide methods. So under the radiological data for the first time patients with sarcoidosis of respiratory organs in 33 examined patients changes in limens of one and two regions, in 29 – in 3, 4 and more regions are revealed. And by data of radionuclide researches changes in 1 and 2 regions are found in 20 observed patients and in 3 and more regions – in 42 patients (fig. 1).

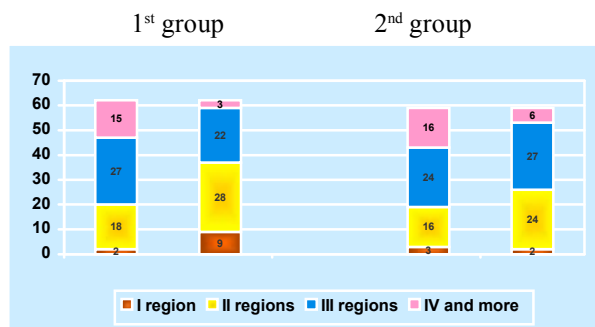


Fig. 1. Comparative analysis of spreadness of pathological changes on data of roentgenological and radionuclide methods.

* In each group – 1 column – the radiological data, 2 column – radionuclide

We observed the same pattern and in the patients with relapsing sarcoidosis, i.e., at comparison of results we have positioned that according to the scintigraphy data, prevalence of pathological process in lungs more than radiological.

Comparative analysis of prevalence of pneumosclerotic changes in patients with sarcoidosis of respiratory organs has shown that according to radiological examination in the 1st group the changes are revealed in 31 patients, and at radionuclide research

– in 56 observed patients, that has compounded 90,3 %. In the second group of observation this data are most indicative – 93,2 %.

Traditional methods of treatment for all patients applied: hormonal therapy with application of Prednisolonum or Metilpred-nisolonum; anti-inflammatory therapy with application of nonsteroid drugs – Delagilum or Plaquenilum; antioxidants, including vitamins E+C.

At comparison of results of patients' therapy of the

1st group is noticed that, by data of radionuclide researches before treatment predominated changes in limits of 3, 4 and more regions, after treatment their

quantity has decreased. Sarcoidosis influence of therapy on blood supply restoration at relapsing has smaller effect that, apparently it is bound with irreversible changes (fig. 2).

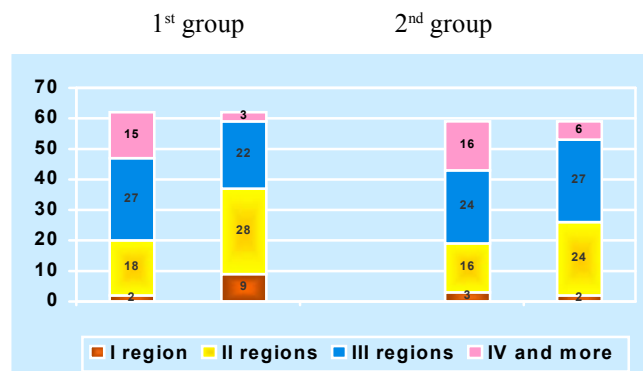


Fig. 2. Comparative analysis of treatment results on data of roentgenological and radionuclide researches.

* In each group – 1 column – before treatment, 2 – after treatment

We also carry out the comparative analysis of treatment efficacy of respiratory organs of patients with sarcoidosis depending on therapy schemas.

Researches have shown that including of corticosteroids in the schema of therapy of respiratory organs of patients with sarcoidosis has rendered more expressed clinical effect in the patients suffering by relapsing process. And nonsteroid therapy was more effective at for the first time revealed patients.

The comparative analysis of diagnostic information of the data of radiological and radioisotope research in patients with sarcoidosis has shown that at the circumscribed processes in lungs (1 – 2 regions) more informative are radionuclide researches. At the same time, at widespread processes in lungs (3 – 4 and more regions) results of radiological and radionuclide researches practically coincide.

CONCLUSIONS

1. Including in the diagnostic program of radionuclide methods essentially increase information of the received data, allowing estimating maximally objectively prevalence and a degree of activity of pathological process.

2. Research of regional blood flow of lungs with application of a radiopharmaceutical drug MAA Tc-99m proves high diagnostic value of radionuclide tests, revealing disturbance of circulation at the overwhelming majority of respiratory organs of patients with sarcoidosis. For the first time revealed patients disturbance of blood flow are diagnosed in 90,3 % of cases, at relapsing sarcoidosis – in 93,2 %.

3. Radionuclide researches allow diagnosing disturbances of regional blood flow in lung regions where radiological pneumosclerotic changes are not defined.

4. Including in the schema of therapy of corticosteroid drugs renders the expressed clinical effect

at all respiratory organs of patients with sarcoidosis. Nonsteroid therapy is effective only at for the first time revealed patients. Radionuclide tests promote more effective monitoring of medical measures.

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