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E: ndmuz@mail.ru
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CLINICAL FEATURES OF CARDITIS IN CHILDREN

Yusupova G.K.[1], Ashurova D.T.[1], Aripova G.M.[2]

[1]Tashkent Pediatric Medical Institute
[2]Clinic of Tashkent Pediatric medical institute

✓ ***Resume***

This article discusses the clinical, laboratory and instrumental features of carditis in children. Carditis is a chronic autoimmune process that develops in children under 16 years of age. Until now, the mechanism of development of this disease has not been fully elucidated, which is of interest for today. This pathological process poses a serious danger in the health care system and among the population, as it develops rapidly and leads to disability in the child population. The study of the factors and mechanisms of development of carditis will optimize early diagnosis and carry out therapeutic and preventive measures.

Key words: carditis, clinic, laboratory and instrumental parameters

КЛИНИЧЕСКИЕ ОСОБЕННОСТИ КАРДИТА У ДЕТЕЙ

Юсупова Г.К.[1], Ашурова Д.Т.[1], Арипова Г.М.[2]

[1]Ташкентский педиатрический медицинский институт
[2]Клиника Ташкентского педиатрического медицинского института

✓ ***Резюме***

В данной статье рассматриваются клинико-лабораторные и инструментальные особенности кардита у детей. Кардиты представляет собой хронический аутоиммунный процесс, развивающиеся у детей младше 16 лет. До сих пор до конца не выяснен механизм развития данного заболевания, чем и представляет интерес на сегодняшнее время. Данный патологический процесс представляет серьезную опасность в системе здравоохранения и среди населения так как быстро развивается и приводит к инвалидизации детского населения. Изучения факторов и механизмов развития кардитов позволит оптимизировать раннюю диагностику и проводить лечебно-профилактические мероприятия.

Ключевые слова: кардит, клиника, лабораторно-инструментальные показатели

BOLALARDA KARDITNING KLINIK XUSUSIYATLARI

Yusupova G.K.[1], Ashurova D.T.[1], Aripova G.M.[2]

[1]Toshkent pediatriya tibbiyot instituti,
[2]Toshkent pediatriya tibbiyot instituti klinikasi

✓ ***Rezume***

Ushbu maqolada bolalarda karditning klinik, laboratoriya va instrumental xususiyatlari ko'rib chiqiladi. Kardit surunkali otoimmün jarayon bo'lib, 16 yoshgacha bo'lgan bolalarda rivojlanadi. Hozirgacha ushbu kasallikning rivojlanish mexanizmi to'liq aniqlanmagan, bu bugungi kunda qiziqish uyg'otadi. Ushbu patologik jarayon sog'liqni saqlash tizimida va aholi o'rtasida jiddiy xavf tug'diradi, chunki u tez rivojlanadi va bolalar populyatsiyasining nogironligiga olib keladi. Kardit rivojlanishining omillari va mexanizmlarini o'rganish erta tashxisni optimallashtirish va terapevtik va profilaktika choralarini amalga oshirish imkonini beradi.

Kalit so'zlar: kardit, klinika, laboratoriya va instrumental ko'rsatkichlar

Relevance

The problem of acute carditis is currently due to its wide distribution, especially in childhood. The reason for this is the steady growth of viral infections, post-COVID complications and allergization of the child population [1,5,6].

One of the main causes of acute carditis today is acute respiratory viral infections (ARVI, coxsackie virus, covid), which remain the most common and global diseases in children. Despite the relative epidemiological well-being over the past 8-10 years, they still account for 70-90% of infectious diseases and cause enormous socio-economic damage [2,4,9,11]. Each influenza epidemic is accompanied by an increase in the number of cases of acute myocarditis, which determines the relevance of studying this problem [3,7,10,115].

Complicated forms of ARVI, coxsackie virus, bacterial and fungal infections, which cause severe disease and determine an unfavorable prognosis, are of the greatest importance in clinical practice [6,13,14].

Diagnosis and treatment of cardiac pathology is one of the most urgent problems in modern medicine. In recent years, a number of researchers have made attempts to use special methods aimed at identifying inflammatory lesions of the heart of infectious, allergic or autoimmune origin as a possible factor in the development of various forms of carditis in children [1,4,8,16].

Autoimmune reactions underlie a wide range of both systemic and organ-specific diseases. A variety of mechanisms for the formation of an autoimmune response currently does not allow us to fully trace all stages of the immunopathological process. However, its constant component is the presence of organ-specific autoantibodies [3,7,13].

Modern studies have demonstrated the ability of a number of specific autoantibodies to directly affect the tissues of the heart, leading to myocardial dysfunction, disturbances in the bioelectrical activity of the heart and, as a result, to the development of carditis and myocarditis. Despite the fact that various explanations can be given for the detection of autoantibodies, there is no doubt that they serve as markers of the autoimmune process and are of great diagnostic value.

Purpose of the study: To study clinical, laboratory and instrumental parameters of children with carditis.

Materials and methods

The study involved 25 children from 2021 to 2022. All patients underwent clinical, instrumental and immunological examinations at the clinic of the Tashkent Pediatric Medical Institute in the Department of Cardiorheumatology. The data collected includes socio-demographic characteristics such as age groups, health characteristics of children.

The diagnosis was established according to clinical and functional data in accordance with the international consensus on the diagnosis and treatment of cardio-rheumatological diseases. The diagnosis was verified on the basis of a thorough medical history, clinical, laboratory (general blood count, urine), biochemical blood tests, instrumental (X-ray, electrocardiography, ultrasound, MSCT) research methods. Particular attention was paid to the prescription of the pathological process, past and concomitant diseases.

Differences were considered statistically significant at $p < 0.05$.

Result and discussion

Analysis of the obtained data on the age of children with carditis revealed the following: children from 1 to 3 years old made up 32.1% (n=8), from 3 to 7 years old made up 36.3% (n=9), from 7 to 14 years - 20.8% (n=5), 11.8% (n=2) were aged 14 years and older. (Fig. 1.)

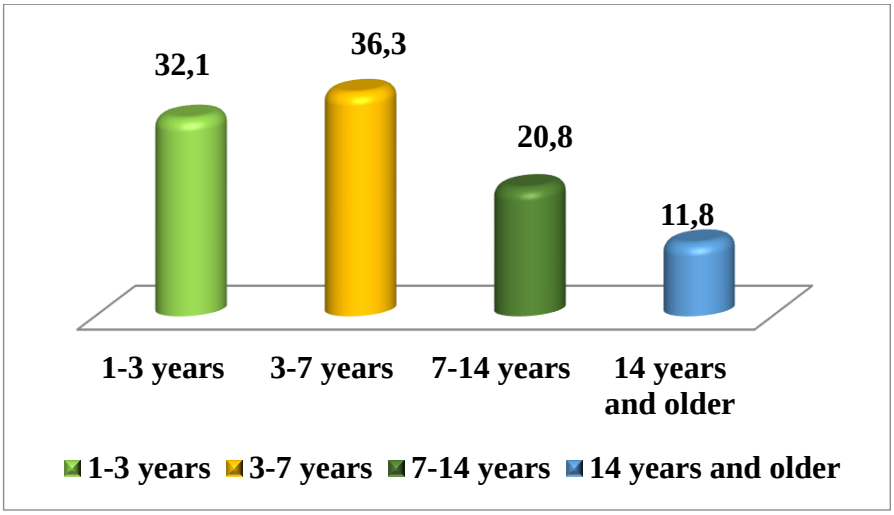

Fig. 1. Age distribution of children with carditis (%), (P<0.05)

In the analysis of gender, the prevalence of males was revealed - 56.0% in this sample of patients. (Fig. 2.)

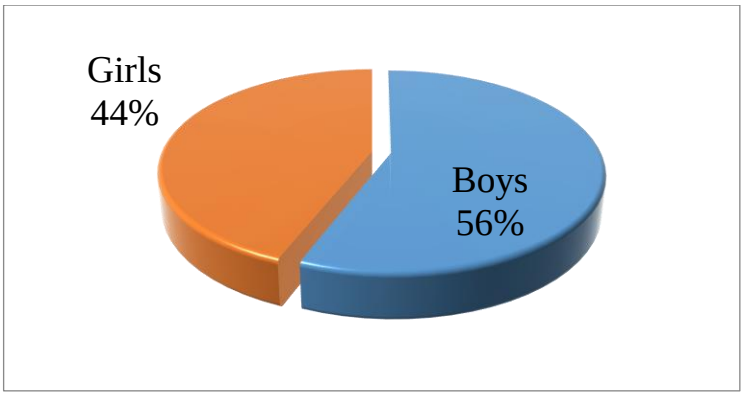

Fig. 2. Distribution of groups by gender in children with carditis (%), (P<0.05)

Among the main complaints of children with carditis were respiratory disorders (pallor, shortness of breath, cough), which occurred in 61.5% of children. Signs of intoxication (fever, general weakness, loss of appetite) were observed in an average of 64.1%. Neurological disorders (headache, moodiness) were on average in 52.3% of children with carditis. (Fig.3.)

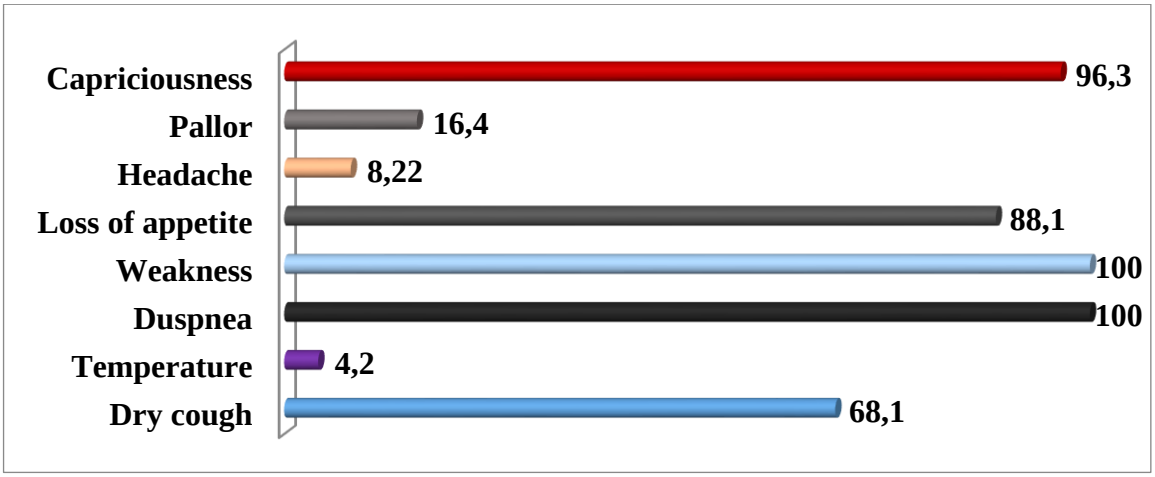

Fig. 3. Main complaints of children with carditis (%), (P<0.05)

An analysis of somatic diseases revealed that anemia was more common in the examined children (40.3%). The frequency of occurrence of diseases of the nervous system was 24.3%. Diseases of ENT organs were detected in 12.6% of children. Hypotrophy, ophthalmic disorders, allergic diseases and rickety changes in the musculoskeletal system were also revealed in an average of 4.21% of children with carditis. (fig.4.)

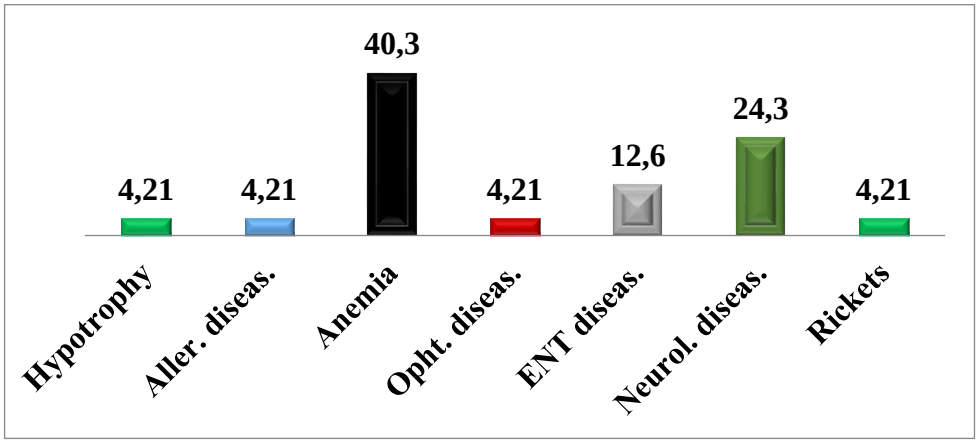

Fig.4. Associated pathology inchildren with carditis (%), (P<0.05)

The analysis of TORCH infection revealed the presence of IgG antibodies to cytomegalovirus and herpes in an average of 24.0% (n=6) of children with this pathology.

Analysis of laboratory data revealed significant changes in the level of leukocytes in the peripheral blood and the erythrocyte sedimentation rate. There were no statistically significant changes in the level of other parameters. (Fig.5.)

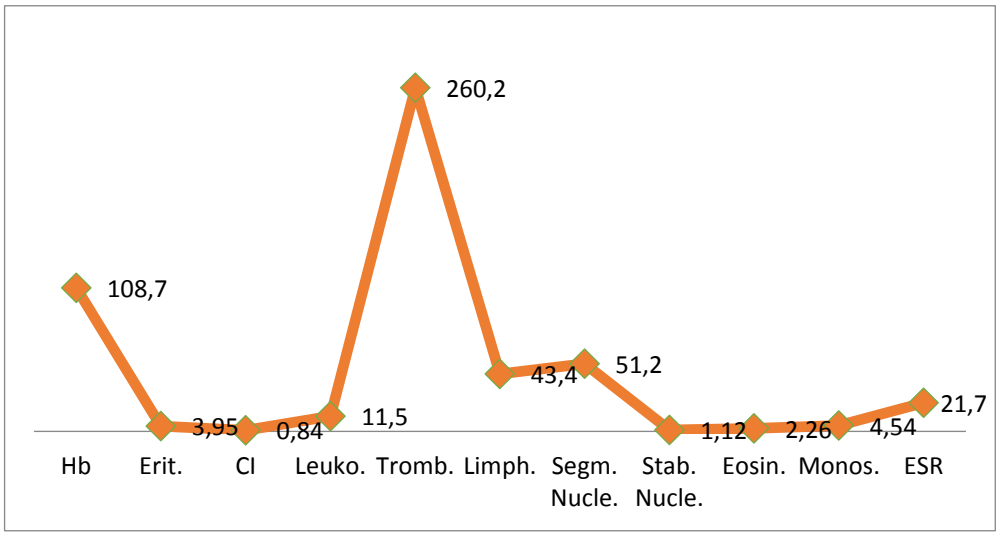

Fig.5. Complete blood count parametersatchildren with carditis, (P<0.05)

In the biochemical analysis of the blood of children with carditis, an elevated level of liver enzymes was detected in 64.0% (n=16) of children, a slight decrease in the level of calcium. Creatinine levels were low in all age groups. (Fig. 6.). C reactive protein is an acute phase protein that determines the extent of the inflammatory process. Children with carditis in this sample had a significantly elevated level of C reactive protein.

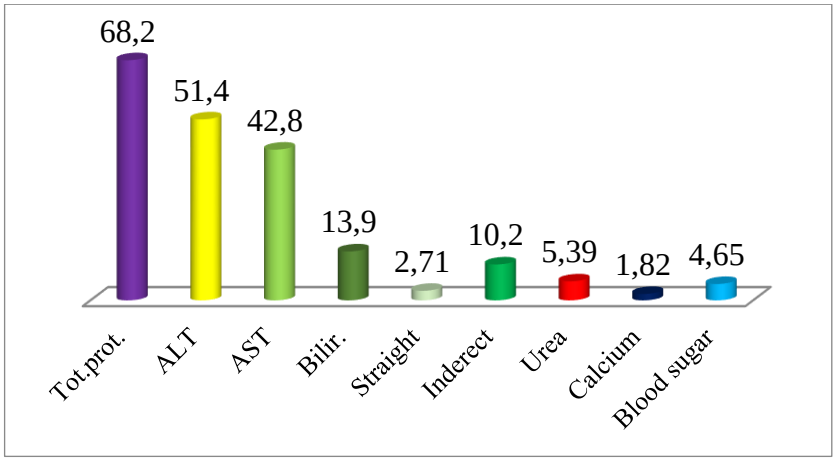

Fig.6. Parameters of a biochemical blood test a children with carditis, (P<0.05).

Analysis of data on ultrasound examination of the abdominal organs in children with carditis revealed inflammatory changes in the liver in 44.1%, in the gallbladder 12.3%, as well as inflammatory changes in the kidneys in 8.21% and signs of ascitic fluid accumulation in 4, 12%. Inflammatory changes in the liver may be associated with autoimmune processes affecting parenchymal organs or with the iatrogenic effects of previously received therapy [12]. (fig.7.)

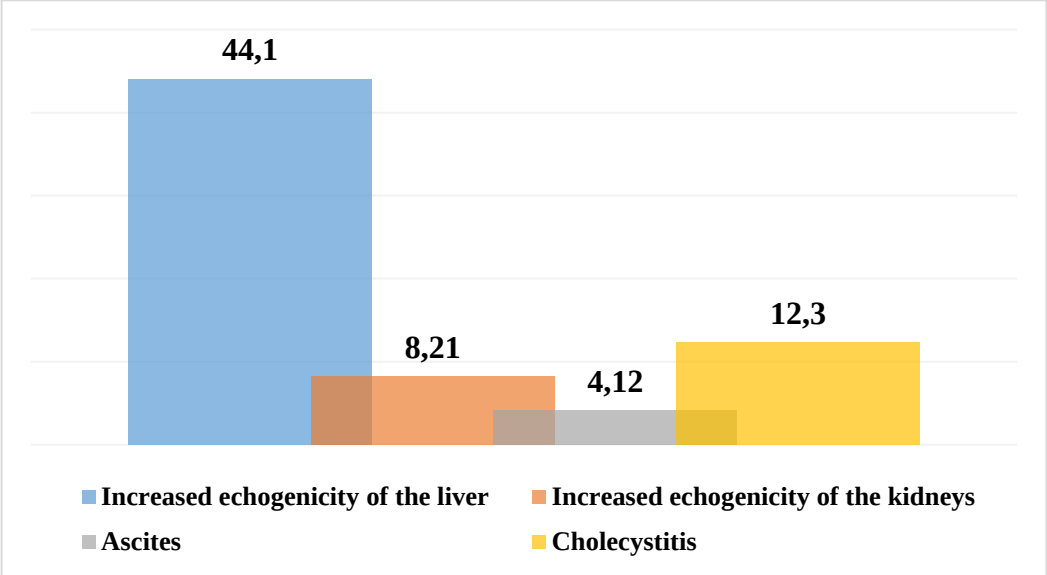

Fig.7. Ultrasound diagnosis of the abdominal organs of children with carditis

Next, we analyzed the data of electrocardiographic diagnostics. The phenomenon of impaired repolarization of the heart was detected in 20.2% of children, as was the blockade of the Hiss bundles, hypertrophy occurred in 64.4% and sinus tachycardia in 28.1% of children with carditis. The above changes are probably the result of the initial manifestations of autoimmune heart damage as a result of the underlying disease [9]. (fig.8.)

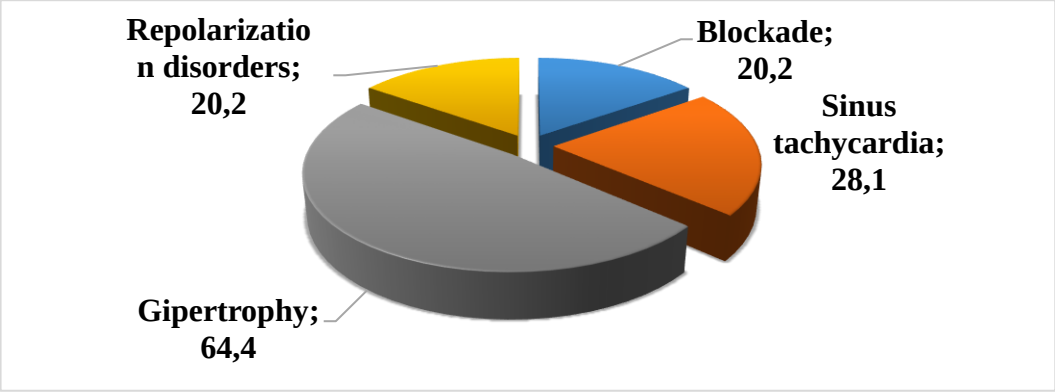

Fig.8. ECG changes in sick children with carditis

EchoCG data analysis revealed signs of carditis in 56.3% of children with this pathology, heart valve insufficiency in 36.1%, aneurysm and hypokinesis of the walls were detected in 8.22% and 4.12%, respectively, in children with carditis. (fig.9.)

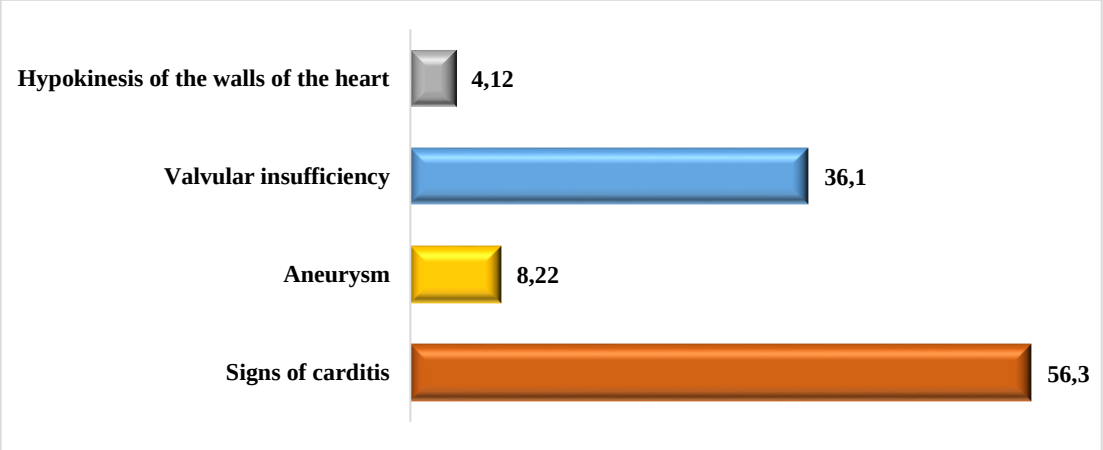

Fig.9. ECHOCG data in children with carditis

In the study of x-ray data, we revealed the following; signs of bronchitis in 8.21%, signs of pneumonia in 4.12%, signs of cardiomegaly in 12.4% of the examined children with carditis. The latter is possibly associated with heart remodeling as a result of the action of compensatory mechanisms in autoimmune damage to the heart tissue. [13] (Fig. 10).

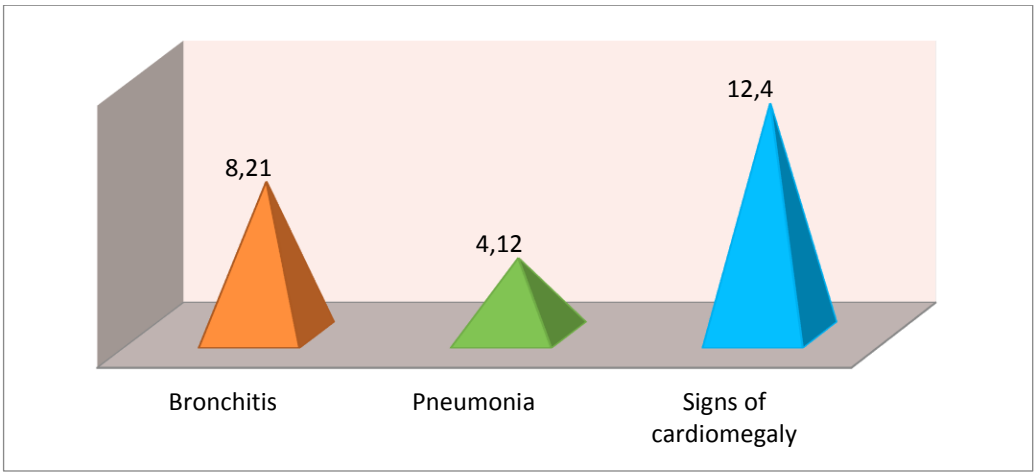

Fig.10. X-ray signs of examined children with carditis

Conclusions

Thus, our studies allowed us to draw the following conclusions: children with carditis were characterized by the prevalence of such complaints as shortness of breath, dry cough, general weakness; Of the concomitant diseases, anemia and diseases of the nervous system prevailed; In the analysis of laboratory data, moderate leukocytosis and an increase in ESR, an increase in the level of liver enzymes, a decrease in the level of creatinine and calcium were characteristic; Instrumental studies revealed a slight lesion of parenchymal organs, arrhythmia, cardiac conduction and valvular insufficiency. The task of the following studies is the analysis of immunological reactivity in order to determine significant markers of the autoimmune process.

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