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Research Article

FEATURES OF BIOCHEMICAL INDICATORS IN THE BLOOD IN INFLAMMATORY DISEASES OF THE NOSE AND PARANASAL SINUSES IN PATIENTS WITH MYOCARDITIS

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ABSTRACT

It is now known that any of the known pathogens can cause myocardial damage, including myocarditis. Often, viruses that can directly interact with cardiomyocytes become an etiological factor, which leads to cell apoptosis. The authors present the results of a biochemical study of blood in patients with diseases of the nose and paranasal sinuses against the background of myocarditis. It is indicated that the disease of the nose and paranasal sinuses affect the biochemical parameters of the blood and, in turn, exacerbate the course of myocarditis.

KEYWORDS

Myocarditis, blood, nose, paranasal sinuses, LDG, KFK.

INTRODUCTION

Infectious diseases, despite the modern possibilities of treatment and prevention, remain the main pathology of the population [2]. To date, it is believed that from 1 to 5% of all patients with acute respiratory diseases, including influenza, have signs of infectious myocarditis [1,5]. It is very difficult to establish the true frequency, since latent and mild forms, which are most characteristic of childhood, range from 24 to 33%, are rarely diagnosed and end on their own in the absence of any special treatment, or transform into a chronic process with nonspecific symptoms [2,3, 7].

The immediate cause of death is acute heart failure, which progresses against the background of water and electrolyte disorders, intoxication, and the direct effect of the pathogen or its toxin on cardiomyocytes [6]. Any infectious disease may be accompanied by certain changes in the

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functioning of the cardiovascular system of varying severity and duration.

Dysfunction of the cardiovascular system can occur in about 80% of patients with various acute infectious diseases [4,9]. Most of them are a natural functional reaction of the body, they end on their own, without additional special treatment. But some patients develop rhythm disturbances and heart failure, often with a long protracted course, and sometimes with a risk of death.

It is now known that any of the known pathogens can cause myocardial damage, including myocarditis [5]. Viruses that can directly interact with cardiomyocytes often become an etiological factor, which leads to cell apoptosis [6].

The diagnosis of myocarditis or cardiomyopathy is not in doubt, usually in severe forms of myocardial damage. With mild or moderate severity, the observed clinical symptoms of complications are nonspecific and varied, depending not only on the etiology and severity of the manifestations of the underlying process, but also on the individual characteristics of the organism.

In approaches to the treatment of infectious lesions of the myocardium, contradictions remain. Scientific studies evaluating the effectiveness of various drugs in infectious myocarditis that developed against the background of acute respiratory infections are few and contradictory. Metabolic agents for various pathologies of the myocardium, according to some authors, are undoubtedly necessary, but others consider their appointment unreasonable [5,10].

Almost 80% of patients with various acute infectious diseases have certain changes in cardiovascular activity [8]. Most of them represent a natural functional reaction of the body to the action of the pathogen and completely disappear as a result of the treatment of the underlying pathology. However, in some cases, an independent pathological process develops in the heart, which can directly affect not only the course of infection, its duration and outcome, but also determine the quality and life expectancy [4,9].

The aim of this study is to identify biochemical changes in the blood in inflammatory diseases of the nose and paranasal sinuses in patients with myocarditis.

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Material and methods. The study included 186 patients with myocarditis who were hospitalized at the Republican Specialized Center for Cardiology. The patients were divided into two groups. The first group consisted of 80 patients with chronic inflammatory diseases of the nose and paranasal sinuses. The second group consisted of 106 patients without pathology of the nose and paranasal sinuses. All patients were subjected to a comprehensive clinical and laboratory study, which included the collection of an anamnesis of the disease, laboratory tests, nasal endoscopy, X-ray examination and biochemical studies. The control group consisted of 20 healthy volunteers from among the employees of the 2nd clinic of the Tashkent Medical Academy.

Results. Patients of group I complained of difficulty in nasal breathing (92.5%), discharge from the nose (78.4%), impaired sense of smell (22.2%), subfebrile fever (36.4%), general weakness (42.5%). Headaches were also often noted (78.4%), more in the maxillary region. Patients of the II group had practically no complaints from the nose and paranasal sinuses. With comparative indicators of blood tests in the studied groups (table 1), it was revealed:

Table 1

Parameters of the general blood test in patients with myocarditis

Indicators	Group I, M±m (n=80)	II group, M±m (n=106)	Control group, M±m (n=20)
Leukocytes (10^9/l)	7,54±0,60*	6,84±0,52	6,15±0,39
ESR (mm/h)	21,05±3,40*	18,73±3,05*	6,36±0,80
Lymphocytes (%)	22,64±1,96	26,45±1,87	30,87±1,90
Monocytes (%)	4,61±0,56	4,25±0,42	3,58±0,37
Eosinophils (%)	1,24±0,26	1,46±0,30	2,47±0,32

*- the difference is highly significant, p<0,001.

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In a laboratory blood test, all patients showed leukocytosis and an increase in ESR, especially these changes were more pronounced in patients with chronic inflammatory diseases of the nose and paranasal sinuses. At the same time, in this group, the number of leukocytes was 7.54±0.60x109/l, and the ESR was increased to 21.05±3.40 mm/hour.

Table 2

Indicators of biochemical blood tests in patients with myocarditis and in the control group

Indicators	Group I, M±m (n=80)	II group, M±m (n=106)	Control group, M±m (n=20)
Creatinine (µmol/l)	78,12±3,10	82,22±2,92	84,60±2,82
Мочевина (mmol/l)	5,04±0,23	5,85±0,30	6,65±0,45
ALT (mmol/g.l)	0,70±0,09	0,64±0,07	0,42±0,06
AST (mmol/g.l)	1,13±0,23*	0,94±0,18	0,48±0,06
LDG (mmol/g.l)	7,97±1,24*	7,20±1,03*	4,90±0,28
KFK (mmol/g.l)	10,68±3,10*	8,76±2,74*	2,86±0,49
Protein (g/l)	73,40±1,51	72,25±1,52	70,18±1,65

***- the difference is highly significant, p<0,001.**

As shown in Table 2, the biochemical analysis of blood also shows more pronounced changes in patients of the first group than in patients of the second group.

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An increase in AST (1.13±0.23 mmol/g.l) in patients with myocarditis is associated with cell destruction or increased plasma membrane permeability. There was also an increase in creatine phosphate kinase (CPK) in patients of both groups (10.68±3.10 mmol/g.l and 8.76±2.74 mmol/g.l, respectively), which indicates increasing myocardial damage.

When studying the level of troponin I by a quantitative method in patients of the first group with chronic diseases of the nose and paranasal sinuses, its average concentration was significantly higher (p=0.0001) than in patients of the second group without pathology of the nose and paranasal sinuses (0.49±0, 09 Ng/ml and 0.39±0.06 Ng/ml, respectively). Data from the study of the level of troponin I by a quantitative method are presented in table 3.

Table 3

Troponin I level by quantitative method in patients with myocarditis

Groups	Number of patients n	Troponin I level, Ng/ml, M±m
I group	80	0,49±0,09
II group	106	0,39±0,06
Control group	20	0,05±0,02

***- the difference is highly significant, p<0,001.**

In connection with the foregoing, a laboratory study showed specific changes in the blood in the myocardium, as well as a comparative assessment of pronounced changes in the simultaneous course of inflammation in the myocardium and paranasal sinuses.

CONCLUSION

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Thus, our studies of patients with myocarditis revealed the fact that the clinical course of myocarditis is more pronounced in patients with chronic inflammatory diseases of the nose and paranasal sinuses due to the presence of an infection focus in the ENT organs.

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