

EFFECTS OF PENTOXIFYLLINE IN CHILDREN WITH MYOCARDITIS

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Abstract. Myocarditis is inflammation of the myocardium with necrosis of cardiomyocytes. Myocarditis can occur for various reasons (eg, infectious diseases, cardiotoxins, drugs, systemic diseases such as sarcoidosis), but is often idiopathic. Symptoms can vary and include fatigue, shortness of breath, swelling, palpitations, and sudden death. Diagnosis is based on symptoms and clinical findings on an abnormal electrocardiogram, cardiac biomarkers, and cardiac imaging in the absence of cardiovascular risk factors. Endomyocardial biopsy confirms the clinical diagnosis of myocarditis. Treatment depends on the cause, but common measures include medications to treat heart failure and arrhythmias, and rarely surgery (eg, intra-aortic balloon pump, left ventricular assist device, transplant). Immunosuppression is used in some types of myocarditis (for example, hypersensitivity myocarditis, giant cell myocarditis, sarcoid myocarditis).

Keywords: myocarditis, origin, treatment, significance of pentoxifylline for treatment.

Myocarditis - inflammation of the myocardium with necrosis of cardiomyocytes. Biopsy-proven myocarditis is an inflammatory myocardial infiltrate usually composed of lymphocytes, neutrophils, eosinophils, giant cells, granulomas, or a mixture of cells.

Signs

Clinical manifestations of myocarditis are diverse. Patients may have minimal clinical manifestations or fulminant heart failure and fatal arrhythmias. Symptoms depend on the etiology of myocarditis and the severity of myocardial damage.

Myocarditis can be acute, subacute or chronic. There is no fixed period for each period of the disease. The acute phase lasts several days, the subacute phase lasts from several weeks to several months. If myocarditis does not disappear after several months, it is called chronic myocarditis. In some cases, myocarditis can lead to dilated cardiomyopathy.

Drive

Heart failure includes the use of diuretics and nitrates for symptomatic relief. This may be necessary in cases of fulminant heart failure.

Associated with heart failure and arrhythmias, infective myocarditis is usually treated with supportive care. Antiviral therapy has been shown to be beneficial in the treatment of viral etiologies. Bacterial etiology can be treated with antibiotics, but this has not been shown to be effective except perhaps during the acute infectious phase. Parasitic infection should be treated with appropriate antiparasitic agents.

Pentoxifylline solution for injection 5ml 2% N5

Arterial hypotension (risk of lowering arterial pressure), impaired renal function (creatinine clearance - less than 30 ml/min) (high risk of side effects), severe liver disorders (high risk of side effects and risk of accumulation) , including as a result of the use of anticoagulants or disorders of

the blood coagulation system, patients with a high tendency to bleeding (the risk of developing heavy bleeding) should be cautious when prescribing the drug.

Method of administration and doses

The dosage and method of administration are determined by the doctor depending on the severity of the blood circulation disorder and the individual absorption of the drug.

The usual dose is 1-2 continuous infusions per day (morning and afternoon) containing 200 mg (2 ampoules of 5 ml) or 300 mg (3 ampoules of 5 ml) of pentoxifylline. The contents of the ampoule are diluted in 0.9% solution of sodium chloride or Ringer's solution or 5% solution of dextrose (glucose) at the rate of 1 ampoule (100 mg of pentoxifylline) in 250-500 ml of solvent.

It is recommended not to exceed the delivery rate of 100 mg/hour, that is, 1 ampoule for 60 minutes.

Depending on co-morbidities (heart failure) there may be a need to reduce the administered volume. In such cases, it is recommended to use a special infuser for controlled infusion.

In patients with renal insufficiency (creatinine clearance (creatinine clearance) less than 30 ml/min), the dose should be reduced by 30-50%, depending on the individual absorption of the drug by the patient.

Dose reduction is necessary for patients with severe liver dysfunction, based on personal preference.

Treatment can be started with small doses in patients with low arterial pressure, as well as in persons at risk due to the possibility of a decrease in pressure (severe forms of ischemic heart disease or patients with hemodynamically significant stenosis of cerebral vessels). In such cases, the dose can only be increased gradually.

In the elderly, it is recommended to reduce the dose and control arterial pressure, especially when used together with hypotensive and vasodilating agents.

In parallel with parenteral administration, pentoxifylline can be administered orally in the form of tablets.

Side effects

When pentoxifylline is used in large doses or when the rate of infusion is high, the following side effects can sometimes develop:

On the part of the skin and subcutaneous fat layer: hyperemia of the skin of the face, bleeding on the skin of the face and upper chest, edema, increased brittleness of nails;

On the part of the digestive system: feeling of fullness and pressure in the stomach, nausea, vomiting, diarrhea;

From the cardiovascular system: tachycardia, arrhythmia, cardialgia, exacerbation of angina pectoris, decrease in arterial pressure;

Allergic reactions: itching, skin redness, urticaria, angioedema, anaphylactic shock. Cases of development of aseptic meningitis, intrahepatic cholestasis and increased activity of "liver" transaminases are rarely observed;

From the nervous system: headache, restlessness, sleep disturbance, convulsions;
from the blood coagulation system: thrombocytopenia, bleeding from the skin, mucous membranes, stomach, intestinal vessels.

In the event of side effects, the use of the drug should be discontinued. When the side effects indicated in the instructions appear, the doctor should be informed about it.

Special instructions

Treatment should be carried out under the control of arterial pressure. Prescribing large doses to patients with diabetes who are taking hypoglycemic agents can cause pronounced hypoglycemia (dose adjustment is required). When used simultaneously with anticoagulants, it is necessary to carefully monitor the indicators of the blood coagulation system. Regular hemoglobin and hematocrit levels should be monitored in patients who have undergone recent surgical interventions. A dose reduction (lower delivery rate) may be required in the elderly. Smoking can reduce the therapeutic effectiveness of the drug. The compatibility of the pentoxifylline solution with the infusion solution should be checked in each individual case. The safety and efficacy of pentoxifylline in children have not been adequately studied. During intravenous infusion, the patient should be in a supine position.

Use during pregnancy and lactation

The safety of the use of pentoxifylline in pregnancy has not been established, therefore, the use of the drug is not recommended. Pentoxifylline is excreted in breast milk, so breastfeeding should be stopped during treatment.

Overdose

Symptoms: nausea, dizziness, tachycardia, decrease in arterial pressure, arrhythmia, redness of the skin, convulsions, loss of consciousness, areflexia, tonic-clinic convulsions.

Treatment: symptomatic treatment is carried out. The patient should lie in a horizontal position with his legs raised. No specific antidote is known. Monitoring of the vital organs of the body and general measures aimed at keeping them are carried out, the permeability of the respiratory tract is monitored; seizures - diazepam.

Hypoglycemic effect of insulin may increase in patients with diabetes mellitus against the background of parenteral administration of pentoxifylline in large doses.

When used simultaneously with ketorolac, the risk of bleeding and/or prothrombin time may increase; with meloxicam - the risk of bleeding increases; with symptomatic drugs, ganglioblockers and vasodilators - can increase arterial pressure; with heparin, fibrinolytic drugs - increased anticoagulation effect is observed.

Cimetidine significantly increases the concentration of pentoxifylline in the blood plasma (risk of developing side effects).

May cause overexcitability when prescribed with other xanthines. In some patients, the simultaneous administration of pentoxifylline and theophylline can lead to an increase in theophylline level. This may increase or worsen the side effects associated with theophylline.

REFERENCES

1. Закирова Б. И. и др. Пищевая аллергия у детей //Достижения науки и образования. – 2021. – №. 4 (76). – С. 65-66.
2. Abilkasimovna K. G., Shavkatovich G. J., Shokirovna D. L. СОВРЕМЕННЫЕ КЛИНИКО–ЭТИОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ВНЕБОЛЬНИЧНОЙ ПНЕВМОНИИ У ДЕТЕЙ С МИОКАРДИТАМИ //JOURNAL OF BIOMEDICINE AND PRACTICE. – 2022. – Т. 7. – №. 3.
3. Лим М. В., Давурова Л. Ш. УСОВЕРШЕНСТВОВАНИЕ ИНСТРУМЕНТАЛЬНЫХ МЕТОДОВ ДИАГНОСТИКИ ПРИ ВНЕБОЛЬНИЧНОЙ ПНЕВМОНИИ У ДЕТЕЙ С МИОКАРДИТАМИ //Вопросы науки и образования. – 2022. – №. 3 (159). – С. 35-39.

4. Закирова, Б. И., Азимова, К. Т., Ибрагимова, М. Ф., Жураева, Б. Г., Давурова, Л. Ш. К., & Мамаризаев, И. К. (2021). Пищевая аллергия у детей. Достижения науки и образования, (4 (76)), 65-66.
5. Abilkasimovna, K. G., Shavkatovich, G. J., & Shokirovna, D. L. (2022). СОВРЕМЕННЫЕ КЛИНИКО–ЭТИОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ВНЕБОЛЬНИЧНОЙ ПНЕВМОНИИ У ДЕТЕЙ С МИОКАРДИТАМИ. JOURNAL OF BIOMEDICINE AND PRACTICE, 7(3).
6. Мурадова Р. Р., Хайдаров М. М., Омонов Э. М. ОПТИМИЗАЦИЯ ТЕРАПИИ БОЛЬНЫХ С ОТКРЫТОУГОЛЬНОЙ ГЛАУКОМОЙ С УЧЕТОМ ПАРАМЕТРОВ СОСТОЯНИЯ МИКРОЦИРКУЛЯТОРНОГО РУСЛА ЦЕНТРАЛЬНОЙ ЗОНЫ СЕТЧАТКИ //Вопросы науки и образования. – 2021. – №. 10 (135). – С. 66-69.
7. Хайитов У., Ахмедов Ю., Бегнаева М. Клинико-рентгенологическая картина септической пневмонии у детей //Журнал гепато гастроэнтерологических исследований. – 2021. – Т. 2. – №. 3.2. – С. 35-36.
8. Меликова Д. У., Бегнаева М. У. CLINICAL FEATURES OF CHRONIC PYELONEPHRITIS IN CHILDREN //ЖУРНАЛ РЕПРОДУКТИВНОГО ЗДОРОВЬЯ И УРО-НЕФРОЛОГИЧЕСКИХ ИССЛЕДОВАНИЙ. – 2022. – Т. 3. – №. 2.
9. Мурадова Р. Р., Хайдаров М. М., Бегнаева М. У. СОВРЕМЕННЫЕ КЛИНИКО-
10. ФАРМАКОЛОГИЧЕСКИЕ АСПЕКТЫ ПРИМЕНЕНИЯ НЕФРОТОКСИЧНЫХ АНТИБИОТИКОВ //Достижения науки и образования. – 2021. – №. 3. – С. 98-100.
11. Мурадова Р. Р., Хайдаров М. М., Омонов Э. М. ОПТИМИЗАЦИЯ ТЕРАПИИ БОЛЬНЫХ С ОТКРЫТОУГОЛЬНОЙ ГЛАУКОМОЙ С УЧЕТОМ ПАРАМЕТРОВ СОСТОЯНИЯ МИКРОЦИРКУЛЯТОРНОГО РУСЛА ЦЕНТРАЛЬНОЙ ЗОНЫ СЕТЧАТКИ //Вопросы науки и образования. – 2021. – №. 10 (135). – С. 66-69.
12. Хайитов У., Ахмедов Ю., Бегнаева М. Клинико-рентгенологическая картина септической пневмонии у детей //Журнал гепато-гастроэнтерологических исследований. – 2021. – Т. 2. – №. 3.2. – С. 35-36. еликова Д. У., Бегнаева М. У. CLINICAL FEATURES OF CHRONIC PYELONEPHRITIS IN CHILDREN //ЖУРНАЛ РЕПРОДУКТИВНОГО ЗДОРОВЬЯ И УРО-НЕФРОЛОГИЧЕСКИХ ИССЛЕДОВАНИЙ. – 2022. – Т. 3. – №. 2.
13. Мурадова Р. Р., Хайдаров М. М., Бегнаева М. У. СОВРЕМЕННЫЕ КЛИНИКО-
14. ФАРМАКОЛОГИЧЕСКИЕ АСПЕКТЫ ПРИМЕНЕНИЯ НЕФРОТОКСИЧНЫХ АНТИБИОТИКОВ //Достижения науки и образования. – 2021. – №. 3. – С. 98-100.
15. Нуралиева Р. М., Мурадова Р. Р. ЭФФЕКТИВНОСТЬ ПРЕПАРАТА ГАЛСТЕНА ДЛЯ ЛЕЧЕНИЯ ДЕТЕЙ С ЗАБОЛЕВАНИЯМИ ПЕЧЕНИ //Academic research in educational sciences. – 2021. – Т. 2. – №. 11. – С. 1435-1439.
16. Мурадова Р. Р., Хайдаров М. М. КЛИНИКО-ФАРМАКОЛОГИЧЕСКИЕ АСПЕКТЫ ПРИМЕНЕНИЯ ГОРМОНАЛЬНЫХ ПРЕПАРАТОВ В ОФТАЛЬМОЛОГИИ//Достижения науки и образования. – 2021. – №. 3 (75). – С. 100-102. 11. Kurbonalievich A. S. et al. Experience of the Combination of Tiflox and Immunomax in the
17. Treatment of Trichomoniasis Combined with a Bacterial Process //Annals of the Romanian Society for Cell Biology. – 2021. – С. 2376-2380.

18. Нуралиева Р. М., Мурадова Р. Р. ЭФФЕКТИВНОСТЬ ПРЕПАРАТА ГАЛСТЕНА ДЛЯ ЛЕЧЕНИЯ ДЕТЕЙ С ЗАБОЛЕВАНИЯМИ ПЕЧЕНИ //Academic research in educational sciences. – 2021. – Т. 2. – №. 11. – С. 1435-1439.
19. Мурадова Р. Р., Хайдаров М. М. КЛИНИКО-ФАРМАКОЛОГИЧЕСКИЕ АСПЕКТЫ ПРИМЕНЕНИЯ ГОРМОНАЛЬНЫХ ПРЕПАРАТОВ В ОФТАЛЬМОЛОГИИ//Достижения науки и образования. – 2021. – №. 3 (75). – С. 100-102.
20. Kurbonalievich A. S. et al. Experience of the Combination of Tiflox and Immunomax in the Treatment of Trichomoniasis Combined with a Bacterial Process //Annals of the Romanian Society for Cell Biology. – 2021. – С. 2376-2380.