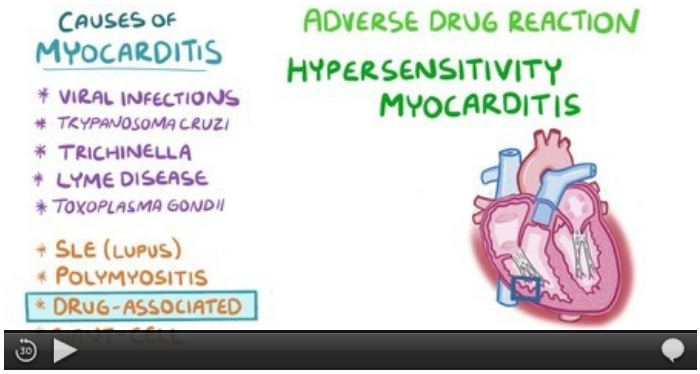
Myocarditis

Myocarditis is a process characterized by inflammatory myocardial infiltration with necrosis or myocyte degeneration, inflammatory changes in the interstitium and vascular structures of the myocardium. The pericardium (perimyocarditis) is also often affected[1]. Myocarditis must be considered a serious disease, unfortunately there is often a misdiagnosis in children with non-specific ECG or X-ray findings.

Causes

- Infectious: the most often **viruses** (**Coxsackie** A, B, echoviruses, polio viruses, influenza, adenoviruses, rubella, varicella, measles, HIV), rarely bacteria (streptococci), fungi, parasites.
- Immunopathological: JIA (juvenile idiopathic arthritis), SLE (l*upus erythematosus disseminatus)*.
- Toxic.
- Idiopathic - the patient comes with dilated KMP after myocarditis, which we no longer identify.
- Combined with a subsequent pathological autoimmune reaction (histologically most often lymphocytic myocarditis).

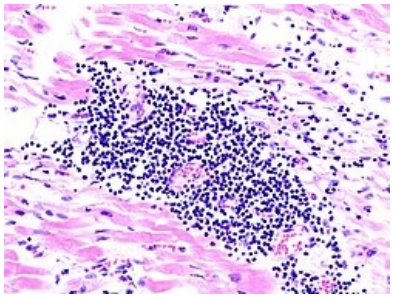


Definition, patogenesis, symptoms, complications, treatment.

Myocardial damage occurs either by direct **invasion of the infectious agent** (viral replication), by the **action of a toxin** (diphtheria kardiotoxin...) or by an **immune response** against viral antigens[1].

The clinical picture

From an asymptomatic course to a fatal uncontrollable heart failure.[1] Severity increases with the age of the child.


Viral myocarditis

Myocarditis is usually preceded by a viral disease (respiratory or GIT). Symptoms include fever, headache, sore throat, fatigue, malaise, muscle aches, vomiting, diarrhea, etc. [1] Regarding cardiovascular symptoms, palpitations, dyspnoea, heart pain and, rarely, consciousness blockade)[1].

Myocarditis in infants
: It is usually severe, the child is in a serious condition, suffocating, cyanotic, there is usually fever, gray skin discoloration, cardiac failure, muffled echoes, murmur from mitral insufficiency, even cardiogenic shock.

Myocarditis in older children
: The symptoms tend to be milder. In some cases, the first symptom may be an arrhythmia (a typical AV block is needed for rheumatic fever), but in about a third of patients a sudden onset of pulmonary edema or shock. Tachypnoea, increased fatigue and arrhythmias usually occur.

Diagnosis

We emphasize the correct diagnosis. Follow - up measures can have significant consequences for the child (spa therapy, restriction of sports activities, etc.)

Physical finding
: Tachycardia, three-stroke rhythm, peripheral pulses weakened. On the lungs, cornea, enlarged liver.

Laboratory finding
: Increase in inflammatory markers (may not be in viral myocarditis), CK-MB and troponins, ALT, AST. We also do diagnostic virological and ASLO.

Imaging methods
: **ECG** normal, but non-specific changes (low voltage, arrhythmias) may be present, typically changing over the course of days. **The X-ray of the heart** is usually normal, the heart shadow may be dilated [1]. At **ECHO** we see dilatation, decreased left ventricular function and significantly reduced ejection fraction[1]. As another imaging method, we can use **isotope examination** ((gallium isotope is captured in inflammatory deposits of the myocardium[1]). Myocardial biopsy is rarely used.

In the case of heart failure, about a third of patients die, a third become chronic and a third recover. Progression to **dilated KMP** is common, immunologically conditioned (mainly from chronic active myocarditis). Chronic persistent myocarditis does not lead to failure, but to problems (chest pain, palpitations).

Therapy

We indicate rest and dietary measures (eg alcohol consuption ban).

Subsequently, the treatment focuses on the symptoms of heart failure.

- **Influencing afterload** – ACE inhibitors, which reduce afterload and the extent of myocardial damage, are first-line drugs (eg captopril 0.01-0.03 mg / kg / d).
- **Influencing preload** – diuretics (furosemid 1–5 mg/kg).
- **Influencing cardiac activity** – inotropic substances (dopamine, dobutamine).
- **nfluence of heart rhythm disorders**.

Digoxin is used during the first day 0.04 mg / kg / day in 3 doses (1 / 2-1 / 4-1 / 4) and then 0.01 mg / kg / day in 2 doses. It is not age-restricted and can be given to newborns after birth. It slows down the frequency of the myocardium and improves diastole. Symptoms of intoxication include vomiting, bradycardia and progressive AV block on the ECG. In case of intoxication we use an antidote (Ig against digoxin - antidigitalis globulin).

Immunosuppressants
: Application of immunoglobulins in high doses It is necessary to avoid the acute phase, during which we could increase the extent of necrosis. In the acute phase of viral myocarditis, we can use antiviral drugs (ribavirin) or interferon therapy. We also administer analgesics (eg paracetamol), either after or in an infusion.

References

Related Articles

- Myokarditits (pediatry)
- Endokarditis
- Perikarditis (internal medicine)
- Heart failure
- Dilated cardiomyopathy

External links

- Myokarditida (česká wikipedie)
- Myocarditis (anglická wikipedie)
- Myokarditida.cz (http://myokarditida.cz/cs_CZ/)
- Myokarditida – video (https://www.youtube.com/watch?v=8tLtoHTjkpg)

Source

- BENEŠ, Jiří. *Studijní materiály* [online]. ©2007. [cit. 2010]. <http://jirben.wz.cz>.

References

1. KLENER, Pavel, et al. *Vnitřní lékařství.* 3. edition. Praha : Galén, 2006. 300 pp. ISBN 80-7262-430-X.