

Tricuspid Valve Stenosis

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Tricuspid valve stenosis is a rare defect of the valve, the valve's regurgitation is much more common.^{[1][2]} Tricuspid valve stenosis is most often a result of **rheumatic damage**, most often coinciding with defects of the valves on the left side of the heart.^{[1][2]} Symptoms of right-sided heart failure predominate in the clinical image. The basic diagnostic method is **echocardiography**.^[3] Both percutaneous valvuloplasty and surgical treatment can be considered as a therapy.^[1]

Etiopathogenesis

Generally the tricuspid valve stenosis is a rare defect. The most common etiology is a **rheumatic disorder of the tricuspid valve as well as of the left-sided valves** (especially as a post-rheumatic defect coinciding with mitral stenosis).^{[1][2]} In some cases the disorder is connected to a carcinoid, infectious endocarditis or innate atresia of the valve.^[2] A stenosis in the tricuspid region can be induced even by a large **thrombus** or a **tumor** in the right atrium.^[2]

In terms of pathophysiology the **diastolic pressure gradient is increased** between the right atrium and the right ventricle due to the stenosis, which increases during the inspiration, increased physical activity or a larger fluid intake.^[2] Even an increase of mean arterial pressure by **5 mmHg** in the right ventricle is enough to develop congestion in the central venous flow.^[2] Because of increased pressure in the right atrium, the valve hypertrophies and later dilates, which may even result in the development of atrial fibrillation.^[4] On the record of central venous pressure appears an *a wave* that reaches up to the levels of the systolic pressure in the right ventricle.^[2] The stenosis causes the decrease of diastolic flow through the valve, which results in **the decrease of cardiac output per minute of the right ventricle**. A mitral valve stenosis is usually present at the same time, which doesn't have to significantly manifest, however. The reason is that the tricuspidal stenosis limits the flow of blood into the pulmonary circulation.^[2]

Clinical Manifestation

The clinical manifestation includes mainly **symptoms of the right-sided heart failure**, i.e. increased pressure in the veins of the neck, uncomfortable feeling in the neck area (high *a wave*), hepatosplenomegaly, ascites or even anasarca.^{[1][2]} Fatigue (lowered cardiac output per minute), shortness of breath, hemoptysis (pulmonary thromboembolism during a right-sided atrial fibrillation) are present as well.^[2] Shortness of breath as a typical sign of the (coinciding) mitral valve stenosis doesn't have to manifest as strongly because of lowered blood flow through the right side of heart. **Absence of the signs of congestion in the pulmonary circulation during evident mitral stenosis should lead to the investigation of tricuspidal valve stenosis**^[2]

Findings accompanying the tricuspidal valve stenosis are usually only attributed to mitral stenosis, which is why it is necessary to actively think of a possible tricuspidal valve defect.^[2] Among auscultatory signs, the **diastolic murmur at the lower left edge of the sternum** belongs to the tricuspidal valve stenosis. It can be clarified by various maneuvers altering the flow through the tricuspidal valve (e.g. amplification of murmurs during the inspiration).^[2]

Diagnosis

On the ECG we can observe dilation of the right atrium (P pulmonale), eventually atrial fibrillation.^[2] The basic diagnostic method is echocardiography.^[3] Not only it can be used to assess anatomical changes of the tricuspidal valve, but pressure gradients in the right side, too, which has actually reduced the necessity of right-sided catheterization for confirmation purposes.^[3]

Therapy

Restriction of sodium intake and diuretic therapy may bring symptomatic relief.^[2] Patients with symptoms caused by severe tricuspidal valve stenosis may be indicated for **percutaneous balloon valvuloplasty**. However, like valvulotomy, it can lead to the development of tricuspidal valve regurgitation.^{[2][3]} The **surgical valve replacement** is another option, which is often combined with surgery of other valves. Bioprosthetics are preferred because of higher risk of thrombosis in mechanical valves.^[3] In case of tricuspidal valve stenosis combined with that of the mitral valve the tricuspidal valve is not treated separately, otherwise the pulmonary hypertension would develop.^[2]

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