


Acquired heart defects (mitral and aortic). Clinical picture and diagnostics

ODESSA NATIONAL MEDICAL UNIVERSITY
DEPARTMENT OF PROPAEDEUTIC OF INTERNAL DISEASES

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- ▶ Acquired heart defects - heart valve abnormalities and defects, its holes or partitions between the chambers extending from his vessels, which lead to a violation of intracardiac and systemic hemodynamics and, as a result, predispose to development of:
 - acute or chronic heart failure and circulatory failure
 - rhythm disturbance
 - infective endocarditis

Classification of acquired heart defects:

- ▶ - **etiology**: rheumatic; non-rheumatic (to be specified);
- ▶ - **localization** of the affected valve (type of defect): mitral, aortic, tricuspid, pulmonary artery;
- ▶ - **the nature of the valve lesion** (form of defect): stenosis, insufficiency, combined lesion;
- ▶ - **stages**: I, II, III, IV, V

For reasons of formation, valvular heart defects are classified as follows:

- ▶ rheumatic, formed against the background of rheumatic diseases (in 80% of cases);
- ▶ defects arising as a result of inflammation of the inner lining of the heart (endocarditis);
- ▶ degenerative, or atherosclerotic, they occur in 5.7% of cases; more often these processes develop after 40 to 50 years, calcium is deposited on the leaflets of the empty valves, which leads to the progression of the defect;
- ▶ systemic connective tissue diseases,
- ▶ connective tissue dysplasia
- ▶ trauma, sepsis, infections, overload, autoimmune reactions.
- ▶ syphilitic (in 5% of cases).

There are simple, combined and mix heart defects:

- ▶ **combined** - with the simultaneous presence of stenosis and insufficiency of one valve;
- ▶ **mix** - with the simultaneous defeat of several valves.

Diagnostics

- ▶ In recent years, echocardiography in color Doppler scanning mode, and, if necessary, transesophageal echocardiography has become the main diagnostic method for patients with acquired heart defects (AHVD).
- ▶ The diagnosis is established based on the results of the standard examination.

Obligatory survey

- ▶ History and physical examination findings.
- ▶ Laboratory data - complete blood count (ESR, leukocytes, hemoglobin), biochemistry and serology (proteins and protein fractions, C-reactive protein, fibrinogen, antistreptococcal and complement-binding antibody titers).
- ▶ ECG (myocardial hypertrophy, rhythm disturbance and conduction).
- ▶ EchoCG and Doppler study.
- ▶ X-ray of the chest organs in two projections.
- ▶ Consultation of a cardiac surgeon.

Additional examination:

- ▶ Immunological blood tests (B- and T-lymphocytes, CEC, NST test).
- ▶ Daily ECG monitoring.
- ▶ Coagulogram.
- ▶ Catheterization of cardiac cavities.
- ▶ Coronary angiography

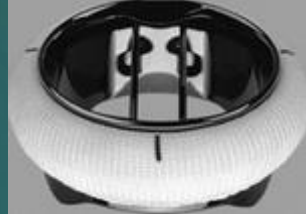
Treatment strategy for acquired valvular heart disease

- ▶ Surgical - the main method of treatment for AVHD
- ▶ Conservative:
 - treatment of the underlying disease
 - prevention and elimination
 - ▶ - heart failure symptoms;
 - ▶ - normalization of the rhythm;
 - ▶ - prevention of thromboembolic
 - ▶ - complications and IE

Surgical treatment of valvular heart disease

Prosthetic heart valve (mechanical prosthesis).

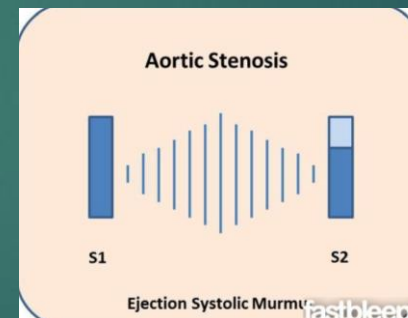
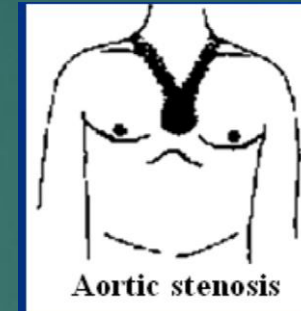
Artificial Heart Valves (biological prostheses).



Systolic murmurs

Aortic stenosis

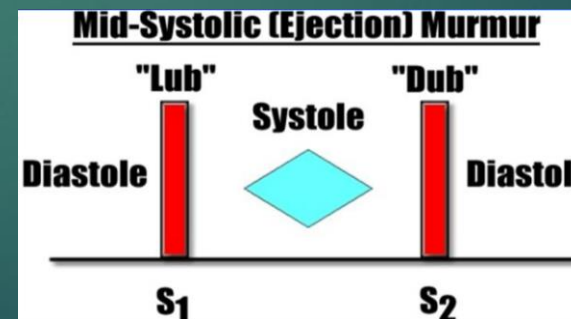
- ▶ One of the most frequent pathologic systolic murmurs is due to aortic stenosis.
- ▶ The murmur of aortic stenosis heard best over aortic area, second intercostal space along right sternal border, with radiation into the neck, along carotid arteries, into the interscapular region (ejection murmur) mur



Systolic murmurs

Aortic stenosis

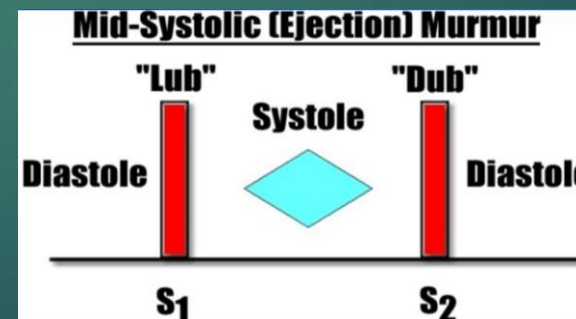
- ▶ The intensity of murmur varies directly with the cardiac output.
- ▶ It has a harsh quality, are usually crescendo-decrescendo in configuration (as a velocity of ejection increases, the murmur gets stronger, and as ejection declines, its diminished).
- ▶ It is typically midsystolic murmur (starts shortly after S1, when the left ventricular pressure becomes enough to open aortic valve; ends before left ventricular pressure falls enough to permit closure of the aortic leaflets).



Systolic murmurs

Pulmonary stenosis

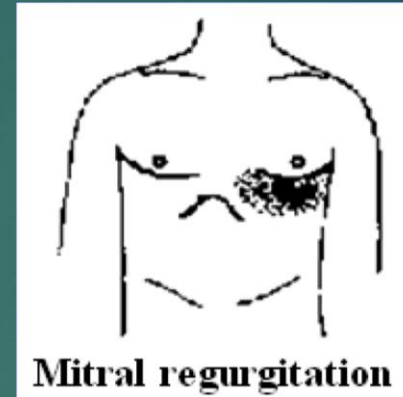
- ▶ The murmur of pulmonary stenosis is heard best on the pulmonic area, second intercostal space along the left sternal border.
- ▶ The murmur can be heard radiating into the neck or the back (ejection murmur), has a harsh quality, a crescendo-decrescendo shape, and midsystolic duration.



Systolic murmurs

Mitral regurgitation

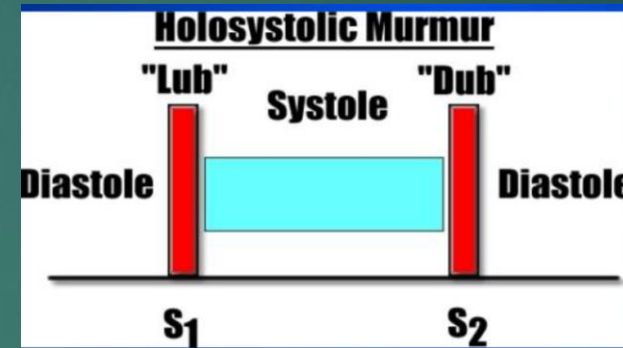
- ▶ Systolic murmur in mitral regurgitation is best heard at the heart apex, with radiation into the axilla (regurgitant murmur).



Systolic murmurs

Mitral regurgitation

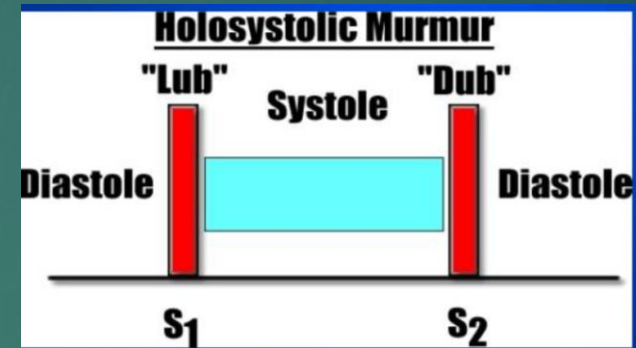
- ▶ The quality of murmur is usually described as blowing, frequency – as high-pitched, the configuration of murmur may vary considerably, and its duration is holosystolic.



Systolic murmurs

Tricuspid regurgitation

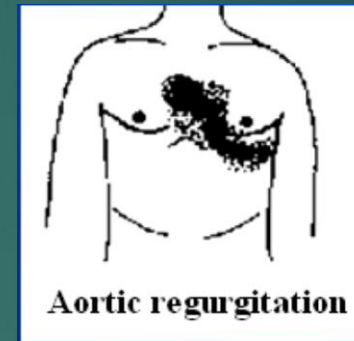
- ▶ The holosystolic murmur of tricuspid regurgitation is best heard at the base of the sternum, generally softer than that of mitral regurgitation, and frequently increases during inspiration.



Diastolic murmurs

Aortic regurgitation

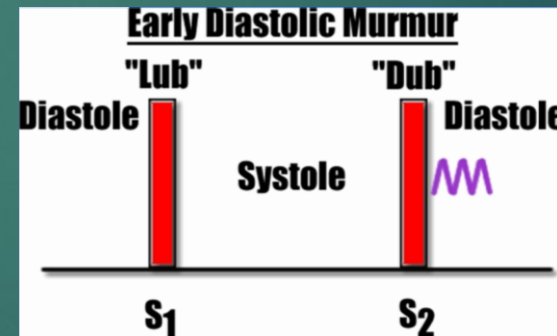
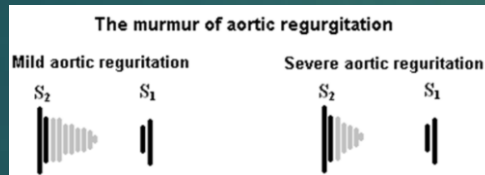
- ▶ Best heard in the second intercostal space along the left sternal edge, it widely radiates along the left sternal border (Botkin-Erb's point) and to be well transmitted to the heart apex (regurgitant murmur).



Diastolic murmurs

Aortic regurgitation

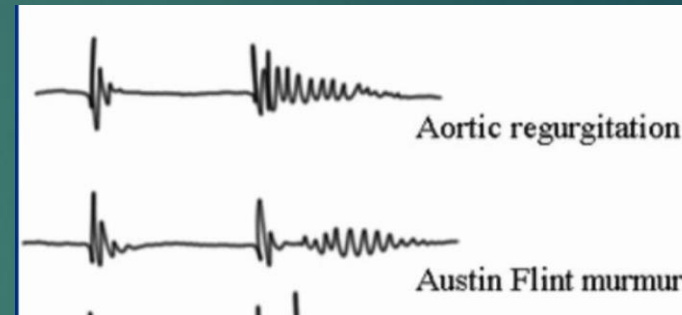
- ▶ Usually characterized as blowing, generally high-pitched, decrescendo (since there is progressive decline in the volume of regurgitation during diastole), and early diastolic murmur.
- ▶ In severe regurgitation, it may be holodiastolic.



Diastolic murmurs

Aortic regurgitation

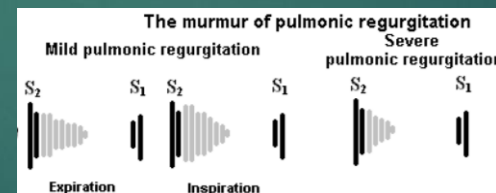
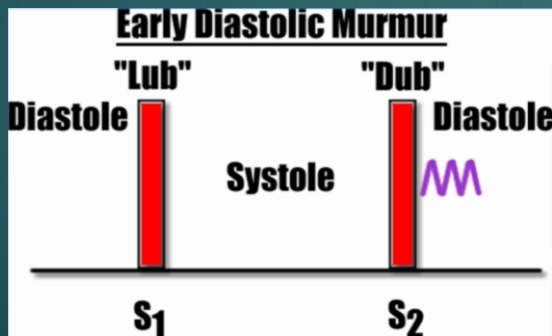
- ▶ The soft, rumbling, low pitched, mid- to late diastolic murmur at the heart apex (Austin Flint murmur) may be detected in severe aortic regurgitation.
- ▶ It is thought to be due to a functional mitral stenosis, as the backflow blood from the aorta presses on the mitral valve, slightly occluding the flow from the left atrium.



Diastolic murmurs

Pulmonary regurgitation

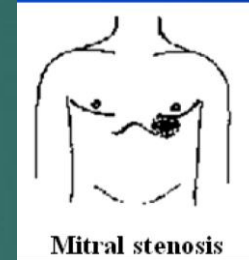
- ▶ Best heard in the second intercostal space to the left of the sternum, with radiation along the left sternal edge (regurgitant murmur), high-pitched, decrescendo, early diastolic murmur.
- ▶ The diastolic murmur of pulmonary regurgitation without pulmonary hypertension is softer, and low-medium-pitched.



Diastolic murmurs

Mitral stenosis

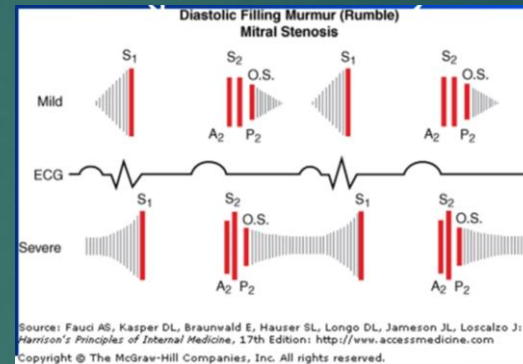
- ▶ The murmur of mitral stenosis is best heard at the heart apex with a little radiation.



Diastolic murmurs

Mitral stenosis

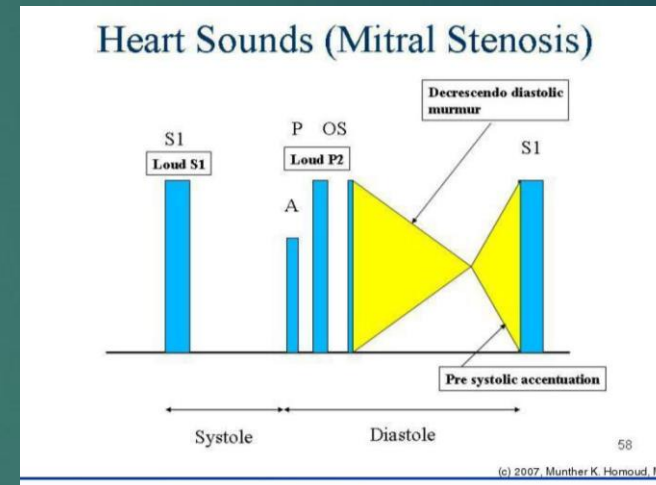
- ▶ It is usually described as low-pitched, rumbling, characteristically follows OS, and can be heard best with the patient in the left lateral decubitus position.
- ▶ The murmur is nearly holodiastolic with presystolic accentuation, or presystolic crescendo, or early diastolic (protodiastolic) decrescendo.



Diastolic murmurs

Mitral stenosis

- ▶ In mitral stenosis functional early diastolic, high-pitched, with a decrescendo quality murmur is heard over the pulmonic area.
- ▶ This murmur, known as Graham Steel murmur, begins with accentuated S2, and is caused by dilation of the pulmonary artery due to significant pulmonary hypertension.



Diastolic murmurs

Tricuspid stenosis

- ▶ The diastolic murmur associated with tricuspid stenosis is localized to a relatively limited area over the xiphoid.
- ▶ It is low-pitched, rumbling, and most right-sided events, may be stronger during inspiration.

