# Radiation diagnosis of acute and chronic heart failure

- Heart failure
- • Acute heart failure
- - develops very quickly (from several minutes to several hours). It appears in the form of pulmonary edema, cardiac asthma and cardiogenic shock. The main causes of acute heart failure are myocardial infarction, rupture of the walls of the left ventricle, acute failure of the aortic and mitral valves.

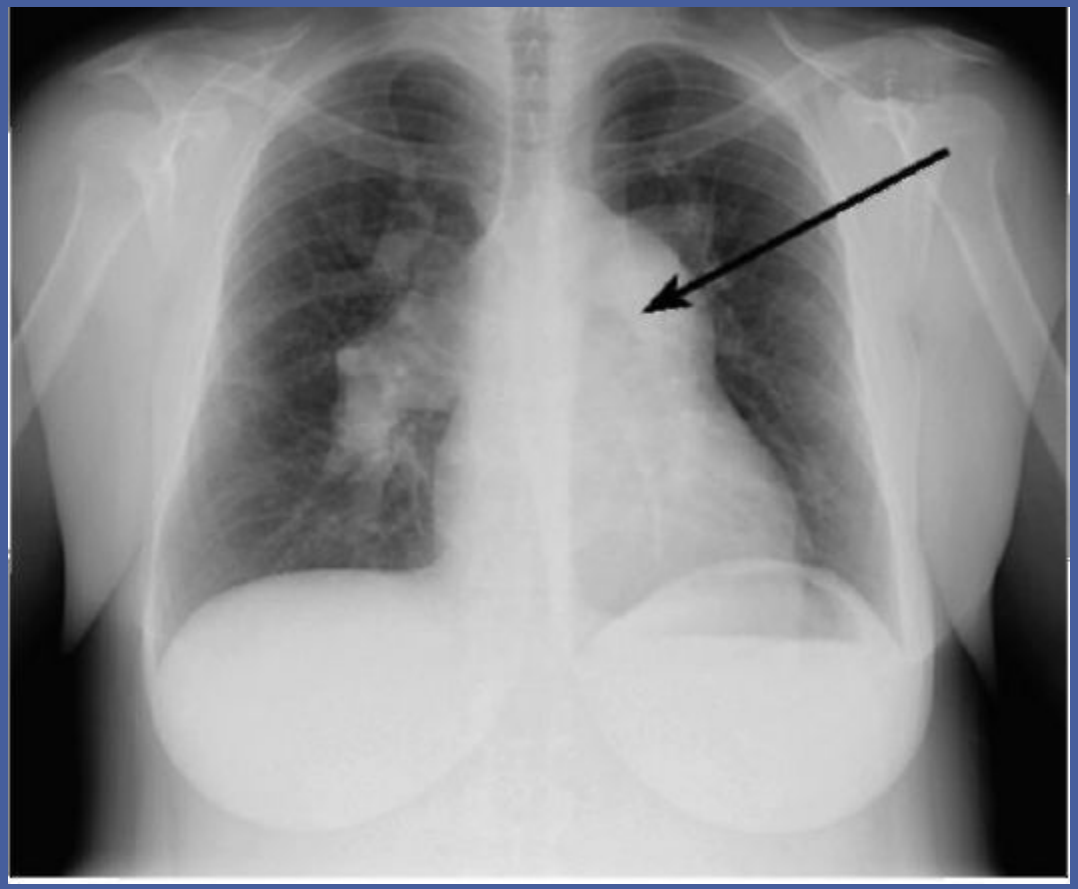
- • Chronic heart failure
- - the formation of pathology is gradual and develops throughout the weeks, months or even years). Causes of chronic heart failure include diseases such as heart disease, hypertension, chronic respiratory failure, prolonged anemia.

- There are three types of lesion localization:
- 1. Left ventricular heart failure
- 2. Right ventricular heart failure
- 3. Mixed heart failure

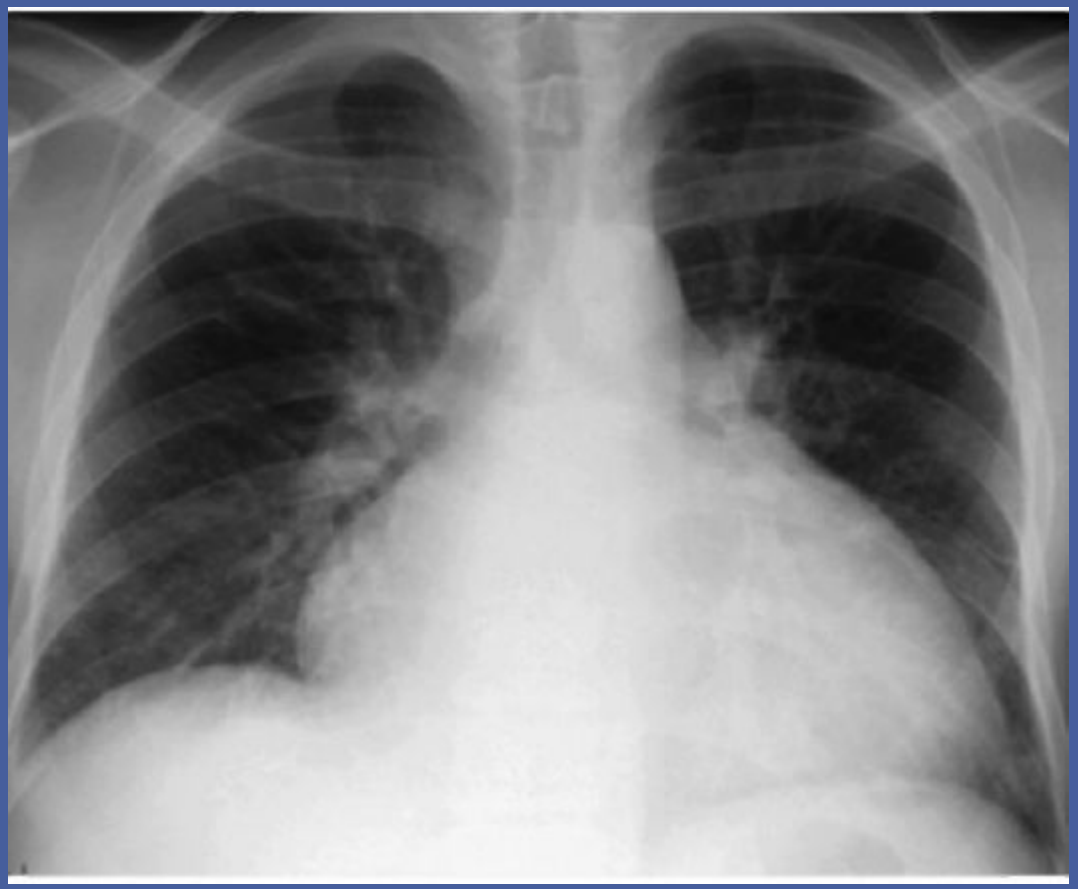
# X-ray examination.

- In acute or uncompensated chronic heart failure, chest radiographic examination of the chest may have purple alveolar pulmonary edema, interstitial lung edema, basal pleural effusion, or venous congestion in the lungs. In some patients, especially the elderly, it is possible to identify the expansion of the heart. The presence of cardiomegaly indicates a serious heart disease, but the determination of the size of the heart by chest radiograph is not entirely informative, since sometimes they can be normal even in patients with proven heart failure.

- Chest X-ray can help in diagnosing augmentation of the left atrium with mitral valve defects, calcification of valve flaps or pericarditis, left ventricular aneurysm or pericardial effusion, which looks like a general increase in the heart.

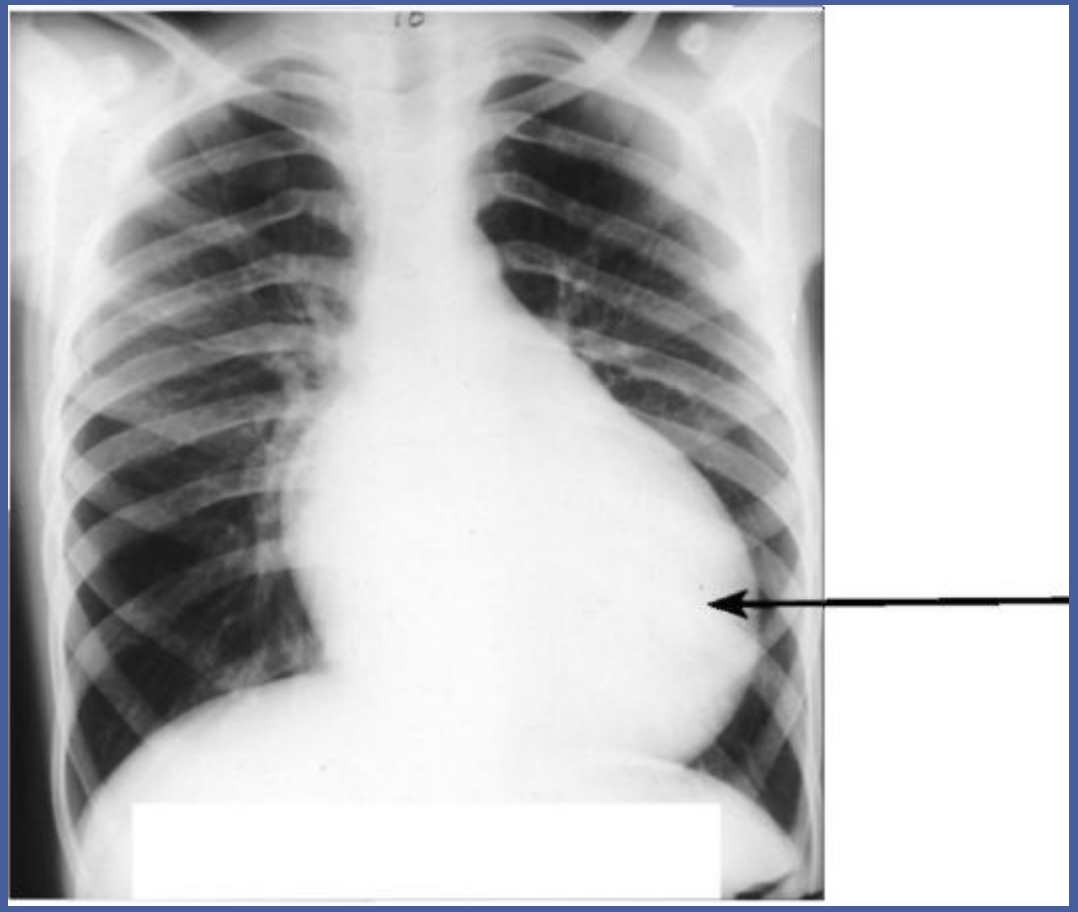


An increase in the right heart with pulmonary hypertension. Direct projection. Signs of an increase in the pulmonary artery (arrow)



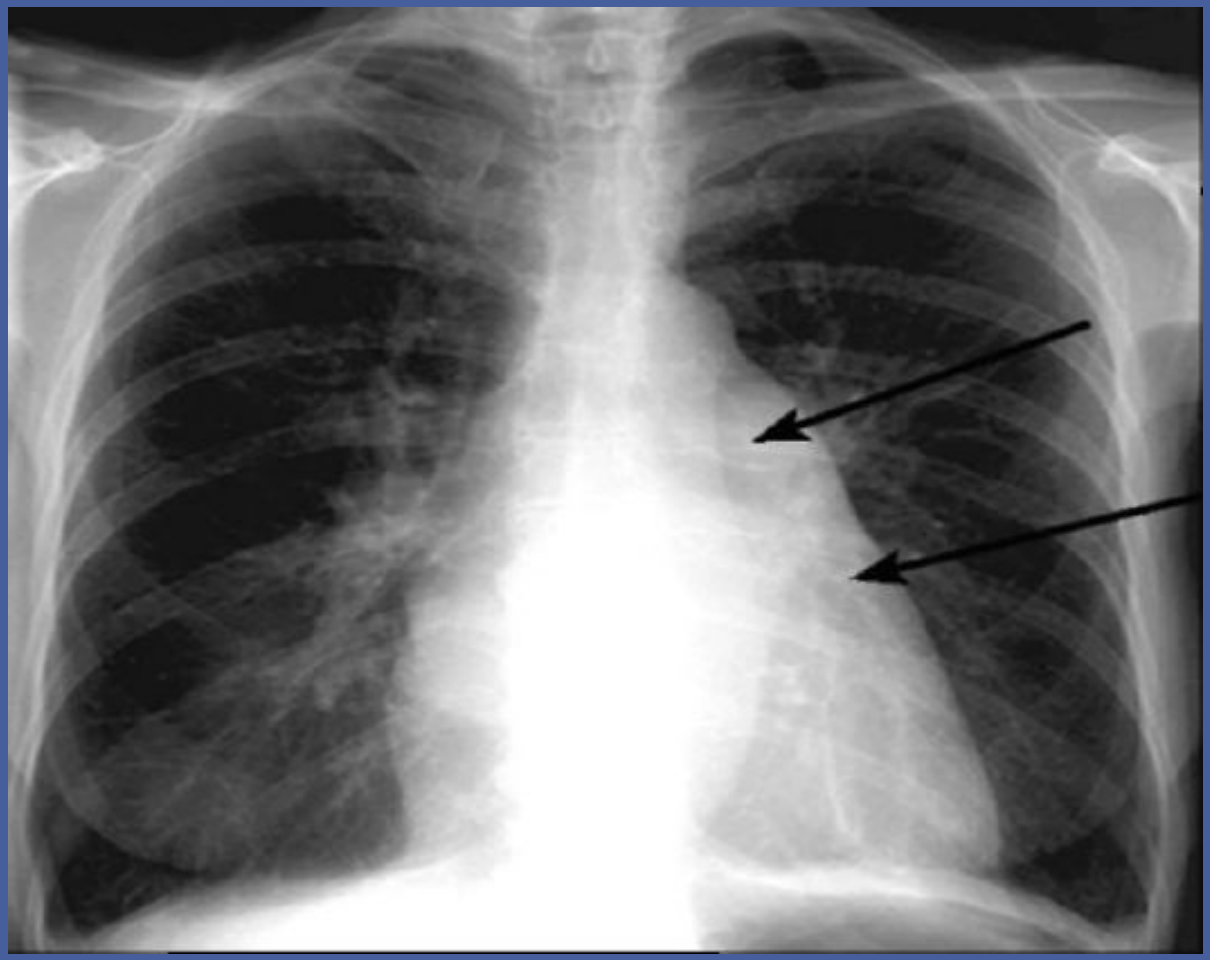
"Trapezoid" configuration of the shadow of the heart: cardiomegaly in severe heart failure. The shadow of the heart is expanded in both directions

The most characteristic sign of heart failure due to IHD, dilated cardiomyopathy and certain valvular heart defects, is the dilated left ventricle



Radiograph of the heart with an increase in the left ventricle. Aortic configuration of the heart.

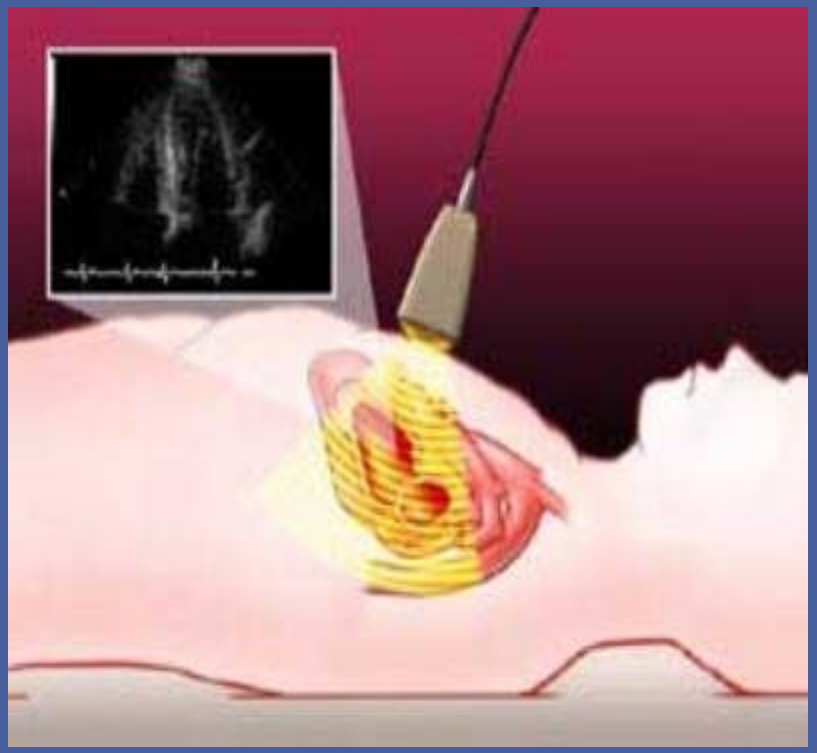
Direct projection. The LV border extends beyond the left median-clavicular line, the cardio-thoracic index exceeds 50%. The top of the ventricle is expanded, rounded (arrow)



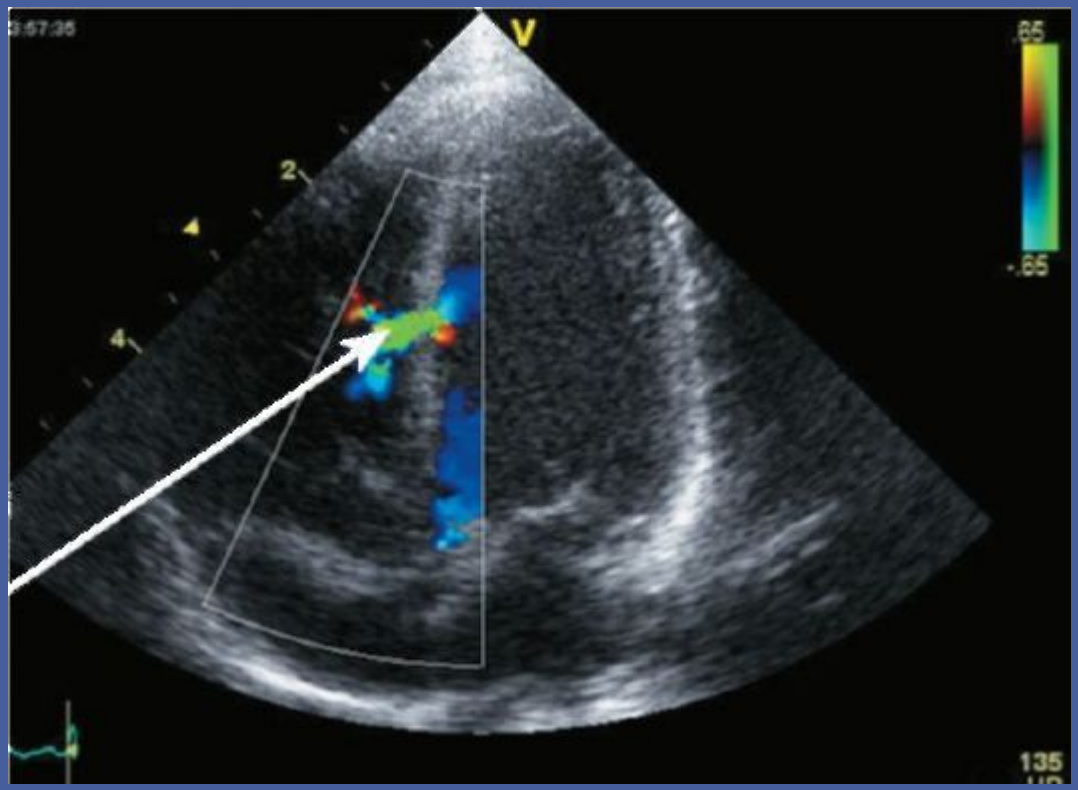
Radiography of the heart with an increase in the left atrium. Mitral configuration of the heart. Direct projection. The arcs of the left atrium (arrow) and pulmonary artery (short arrow) are enlarged. On the right, in the background of the right atrium shade, the shade of the left atrium

# Echocardiography.

- ECHO-KG refers to the main methods of diagnosing heart failure and monitoring its treatment. The method makes it possible to directly diagnose the dysfunction of the heart muscle and to identify its cause.

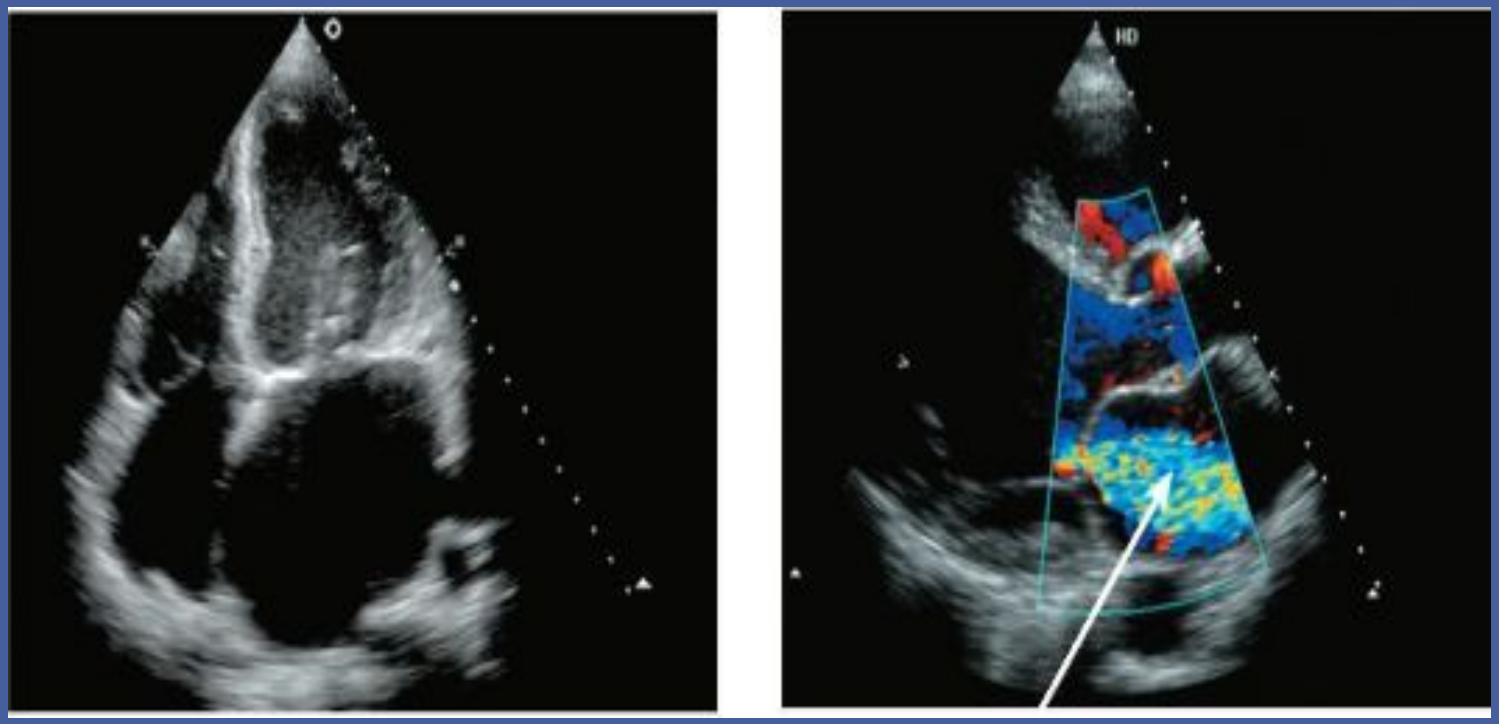


- Doppler echocardiography allows to identify and assess valve stenosis and regurgitation, congenital heart defects, valvular vegetations, intracardial tumors and intracavitary thrombi.




Transthoracic echocardiography. Defect of interventricular septum. Duplex study.

There is a hole in the interventricular septum (arrow), through which the right ventricle discards blood pulmonary arteries, an increase in the left atrium, the left ventricle, and the diameter of the aortic arch.



Echocardiography with defects of the mitral valve: a - stenosis of the left atrioventricular orifice. Diastole. 1 - LV. 2 - Pancreas. The arrow indicates the thickened valves of the mitral valve with limited opening;

b - color Doppler study with mitral insufficiency. Systole. The flow of mitral regurgitation spreads to the left atrium (indicated by an arrow)