

Difference Between Pericardial Effusion and Cardiac Tamponade

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Key Difference – Pericardial Effusion vs Cardiac Tamponade

The collection of fluid within the serous pericardial sac is known as pericardial effusion. When there is only a small amount of fluid in the pericardial cavity, it does not impede the functional capacity of the heart. But if the underlying cause of pericardial effusion is not removed, fluid continues to accumulate inside the pericardial sac. Consequently, the adjacent cardiac chambers are compressed and the pumping action of the heart is impaired. This severe stage is called the cardiac tamponade. **Although there is no change in the pumping capacity of the heart in pericardial effusion, in cardiac tamponade, the pumping capacity is greatly reduced.** This is the key difference between pericardial effusion and cardiac tamponade.

What is Pericardial Effusion?

The collection of fluid within the serous pericardial sac is known as pericardial effusion. This condition is usually associated with a preceding episode of acute [pericarditis](#).

Clinical Features

- Soft and distant heart sounds
- Nature of the apex beat is altered
- During the initial stages, there can be a friction rub which gradually diminishes with time
- Sometimes the fluid accumulation can compress the base of the [left lung](#). This can give rise to a dull sound on percussion over the region below the left scapulae.

Investigations

- [ECG](#) – low voltage QRS complexes with sinus tachycardia can be observed
- Large globular or pear-shaped heart is seen in the chest x-ray
- Echocardiography is the most reliable investigation for the diagnosis of pericardial effusion
- Cardiac CT, pericardial biopsy, and pericardiocentesis are the other investigations that are usually performed.

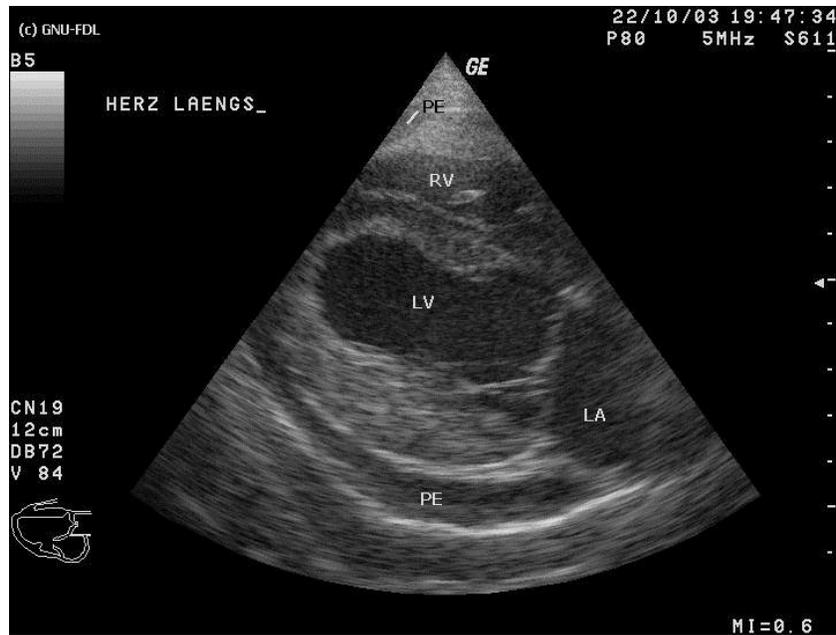


Figure 01: Echocardiography Image of Pericardial Effusion

Treatment

The underlying cause has to be removed. Usually, pericardial effusions resolve spontaneously.

What is Cardiac Tamponade?

When a large amount of fluid has accumulated in the serous pericardial sac causing a pericardial effusion, it can compress the adjacent [ventricles](#), interrupting ventricular filling and impairing the pumping action of the heart. This phenomenon is known as cardiac tamponade.

Clinical Features

- Jugular venous pressure is unusually elevated
- Cardiac output drops alarmingly
- There is a reduction of the systolic blood pressure by about 10mmHg

The same set of investigations used in the diagnosis of pericardial effusion can be used for the diagnosis of cardiac tamponade as well.

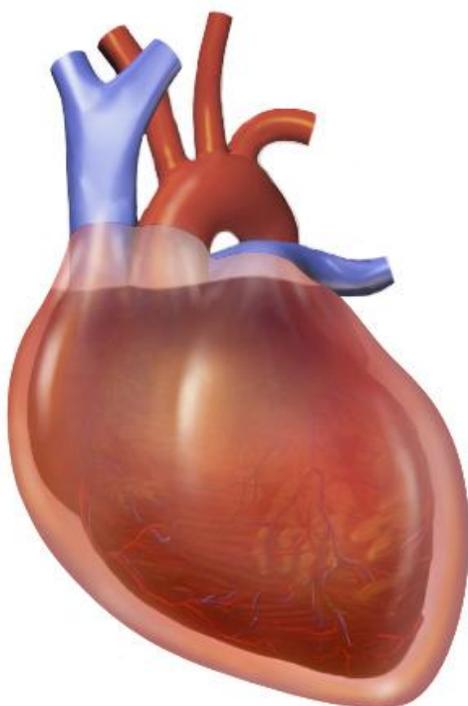


Figure 02: Cardiac Tamponade

Treatment

- Pericardiocentesis is required to drain the fluid that has accumulated and relieve the resistive pressure exerted on the ventricles
- Pericardial fenestration is indicated when there is a higher chance of developing pericardial effusions that can worsen to the cardiac tamponade stage. This process facilitates the free flow of fluid accumulating in the pericardial sac into the adjacent tissues by creating an opening in the pericardial cavity.

What are the Similarities Between Pericardial Effusion and Cardiac Tamponade?

- Accumulation of fluid in the pericardial sac is the pathological basis of both conditions
- The same group of investigations which includes ECG, chest X-ray and echocardiography can be used for the identification of both pericardial effusion and cardiac tamponade.

What is the Difference Between Pericardial Effusion and Cardiac Tamponade?

Pericardial Effusion vs Cardiac Tamponade

Pericardial effusion is the collection of fluid within the serous pericardial sac (the sac around the heart).

Cardiac Tamponade is when fluid in the pericardium builds up, causing a pericardial effusion, and results in compression of the heart, which impairs the pumping action of the heart.

Pumping

Pumping action of the ventricles is not impaired.

Pumping action of the ventricles is impaired.

Target Audience

Clinical features of pericardial effusion are,

- Soft and distant heart sounds
- Nature of the apex beat is altered
- A friction rub which gradually diminishes with time (during the initial stages)
- A dull sound on percussion over the region below the left scapulae (due to the compression of the base of the left lung)

Following are the clinical manifestations of cardiac tamponade,

- Jugular venous pressure is unusually elevated
- Cardiac output drops alarmingly
- There is a reduction of the systolic blood pressure by about 10mmHg

Treatment

The underlying cause has to be removed. Usually, pericardial effusions resolve spontaneously.

Pericardiocentesis and pericardial fenestration are common treatment methods.

Summary – Pericardial Effusion and Cardiac Tamponade

The collection of fluid within the serous pericardial sac is known as pericardial effusion. When a large volume of fluid capable of compressing the adjacent cardiac chambers has accumulated in the pericardial sac, it is called cardiac tamponade. In pericardial effusion, the pumping capacity of the heart is not affected, but in cardiac tamponade, there is a reduction in the pumping capacity of the heart. This can be considered as the major difference between pericardial effusion and cardiac tamponade.

References:

1. Kumar, Parveen J., and Michael L. Clark. Kumar & Clark clinical medicine. Edinburgh: W.B. Saunders, 2009.

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