

Pericardiocentesis (pediatrics)

Indications and technique

- Pericardiocentesis is performed for diagnostic or therapeutic reasons.
- The safest way to perform pericardial puncture is under echocardiographic control. If it is not possible, the use of a precordial ECG lead attached to the puncture needle may reduce the risk of complications (ST or PR segment elevation indicates that the needle is in contact with the ventricular or atrial pericardium).
- The patient must be placed in the supine position with the upper body elevated at an angle of 30 degrees. ECG and, if possible, other hemodynamic parameters (arterial blood pressure, CVP) should be monitored during the procedure.
- Administration of adequate analgesics and local anesthesia (1% mesocain), and the disinfection of the skin area at the lower edge of the sternum are necessary. The injection site is just below the xiphoid process or 1 cm to the left of that.
- An intravenous cannula (18-14G) should be used and a 10 mL syringe should be connected to it. Cannula insertion through the chest wall must be done slowly at an angle of 30 degrees to the chest and should be directed leftward.
- As soon as pericardial effusion is aspirated, the needle is pulled out and the cannula remains.
- If blood is aspirated, the following can be used to distinguish hemorrhagic effusion from blood originating from the heart:
 - Observing clotting (blood clots are present if the blood is originating from the heart)
 - Placing a drop of aspirate on a white swab: if the drop has a red center with a pale contour on its periphery, then this is hemorrhagic effusion; otherwise, if the dot is uniformly red without the pale contour, this is blood originating from the heart.
 - Hematocrit examination helps to distinguish the two accurately.
- To determine the position of the cannula, 2 to 3 mL of saline can be injected through the cannula. Depending on the position of the cannula, the microbubble is displayed in the pericardial cavity or the right ventricle in the ultrasound image.
- In patients with large, chronic effusion who did not respond to medication or who require repeated pericardiocentesis, continuous drainage of the effusion can be prepared by inserting a J-shaped soft catheter (pigtail catheter) into the pericardial cavity using the Seldinger technique. The catheter can be left in the pericardial cavity for 2 to 7 days.



Pericardial effusion

Complications

- Arrhythmia
- Myocardial laceration
- Coronary artery disease
- PNO

Examination of pericardial effusion

The effusion is sent for cytological, biochemical, microscopic (Gram staining), and culture examinations.

Normal pericardial fluid is clear or light yellow. In bacterial pericarditis, the exudate is slightly turbid, rarely purulent. Bloody or serosanguinous effusion is a non-specific finding, occurring in infections, tumors, collagenoses, injuries, and postpericardiotomy syndrome.

A leukocyte count above 1000/mL with a predominance of polymorphonuclear leukocytes is found in infectious pericarditis. If lymphocytes were predominant instead, pericarditis as a result of TBC is suspected. Tumor cells are found in the case of neoplasms and LE-cells are found in the case of SLE.

The glucose level is reduced in cases of infectious pericarditis, neoplasms, and febris rheumatica. In the case of SLE, the glucose level is normal.

LDH levels are elevated in the case of neoplasms.

The level of fibrinogen in exudates is higher than in transudates (in exudates > 5%).

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Source

- HAVRÁNEK, Jiří: *Perikardiální punkce*. (upraveno)