Percutaneous Cannulation of Pericardial Cavity in Acute Cardiac Tamponade Complicating Regular Dialysis Treatment

J ERBEN, J KVASNIČKA, J BAŠTECKÝ and J ENDRYS
University Hospital, Hradec Králové, Čechoslovakia

Forty-two patients were treated for a total of 2169 haemodialyses with cs-DC1-twin-coil-kidneys, each of which has a dialysis area of $0.72^2$ of cuprophane tubing. Eight patients (19%) were afflicted with acute cardiac tamponade.

Technique (Figure 1)

The patient is in the supine position under continuous monitoring of the ECG. The needle is introduced through the abdominal wall under the xiphoid process.

Figure 1

495
upwards along the posterior wall of the sternum for a distance of about 2 cm. Then the needle is resituated at an angle of 30-45° backwards and somewhat to the left side (according to Marfan). After passing through the diaphragm the needle enters the pericardial cavity, usually into its caudal part. Because of the possibility that the pericardial cavity may be loculated into small chambers, due to adhesions it is advisable to change the direction of the needle at a 30° angle from the vertical position to the right or left side, if the first puncture is without effect. A metal leader is passed without force through the needle into the pericardial cavity. The distance between the skin puncture and the pericardial cavity is about 3-5 cm. The needle is changed for a 20 cm long polyethylene catheter with an inside diameter of 1 mm (according to Seldinger). In eight patients with acute cardiac tamponade this technique has never met with complications. Five patients could be discharged as outpatients after a recovery averaging 10 days.

Symptoms due to a sudden fall in cardiac output, low blood pressure (85 - 90/40 - 60 mm Hg) and pulse pressure, high central venous pressure (7 - 22 cm of water column above the sternal angle) with the distension of neck veins and liver, and a positive hepatojugular reflux, paradoxic pulse — present in all cases — have diminished during the first hour of the pericardial paracentesis (250-1450 ml of bloody exudate).

Mortality

One patient died before the evacuation, two patients died of other complications of RDT in the later course.

The possibility of long-lasting cannulation the pericardial cavity has the following advantages:

1. prevention of vasovagal syncope due to a rapid evacuation using a needle;
2. continuous drainage of the pericardial cavity (1-2 days) with a resulting prevention of a repeated tamponade. The pericardial effusion has never recurred after 24 hours of cannulation and a pleuropерicardial window has never had to be established;
3. repeated instillation of drugs prevents the development of constrictive pericarditis. In our opinion the maximal time of cannulation should be no more than 48 hours in order to prevent bacterial contamination.