

Pericardial Catheter Misplaced into the Liver Abscess Drained Cardiac Tamponade Through Hepato-pericardial Fistula

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Abstract

Pericardial catheterisation is a vital procedure to drain and relieve life threatening cardiac tamponade. But like any other invasive procedure it is not devoid of complications related to misplacement. We present a case of ruptured amoebic liver abscess into the misplaced pericardial pigtail catheter into the liver. This case calls attention to the fact that extreme caution should be taken while putting pericardial catheter in presence of contiguous intra-abdominal abscess as it may provide a low resistance passage for the catheter leading to misplacement. Fortunately it drained the liver abscess and our patient did not have any complication related to the misplacement.

Keywords: Cardiac Tamponade; Misplaced Pericardial Catheter; Hepato-Pericardial Fistula.

Introduction

Misplacement of pericardial catheters is dangerous for two reasons. One is non-correction of cardiac tamponade for which it is intended and thus resulting in decompensated state of the patient. Second, it may traverse neighbouring vital organs leading to even increased risk of life threatening complications. We present a case of misplaced pericardial catheter into the liver abscess which fortunately drained pus from both the abscess and pericardium.

Case Report

A 5 year old boy was referred to us with left lobe liver abscess and respiratory distress for a couple of hours. On examination child had tachycardia with

tachypnea with a HR- 130/min and RR- 62/min. Pulses were feeble, regular and child was hypotensive with a BP-70/48 mm Hg. JVP was raised and heart sounds were muffled. Complications like pneumothorax/pyothorax, cardiac tamponade, ruptured liver abscess and pulmonary embolism were suspected. Oxygen therapy, fluid bolus was given and blood transfusion was arranged. Empirical antibiotics were started. Chest examination revealed decreased air entry on left side and abdomen was soft on palpation. Chest X ray was ordered. Fortunately we have Echocardiography available attached to PICU which confirmed cardiac tamponade (pericardial effusion 1.5cm in anterior space, 2 cm in left ventricular free wall along with septal bouncing, collapse of right atrium in late diastole and collapse of right ventricular free wall). It also showed a contiguous liver abscess. So a diagnosis of liver abscess rupturing into the pericardium with cardiac tamponade was made (Figure 1). Immediately percutaneous pericardiocentesis was performed under echocardiographic guidance and a pig tail catheter was inserted. 60 ml of anchovy sauce pus was aspirated. Post pericardiocentesis the child became hemodynamically stable with HR-110/min, RR-48/min, BP-92/48 mmHg and good volume pulses. Chest radiograph was available after 2 hours which ruled out pneumothorax and showed cardiomegaly (CT ratio of 0.640). Abdominal USG

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confirmed a left lobe liver abscess in the 2nd and 3rd segment measuring 38x37x32 mm lying close to the pericardial sac and no evidence of rupture. Laboratory studies showed anemia (Hb-7.7mg/dl) with leucocytosis (TLC- 29,900/cm³, DLC-P82 L12). Liver function tests were within normal limits. Total pus removed in 6 hourly aspirations in the first 24 hours was around 105 ml.

The abscess size reduced to 42 ml. Blood culture and pus culture were sterile. Serology was positive for *Entamoeba histolytica* done by ELISA with antibody titres of 5.8 (normal upto 1.2).

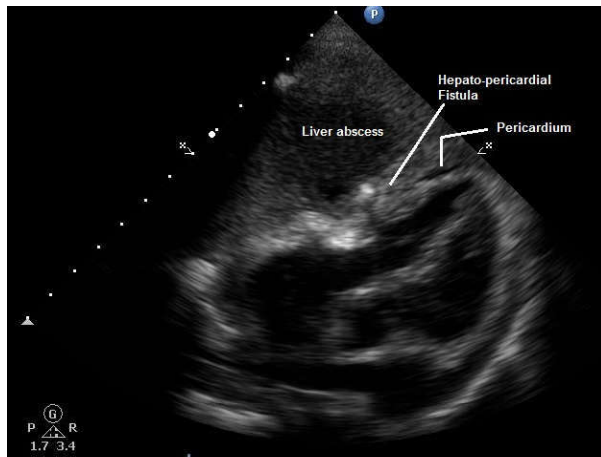


Fig. 1: Echocardiography (post drainage scan) showing liver abscess, pericardium (white turned line) and hepato-pericardial fistula (white line)

CECT scan of abdomen was done to look for communication between the abscess cavity and pericardial sac and for any other extension of the abscess. Surprisingly it showed coiling of the pericardial catheter into the abscess cavity in left lobe of liver (Figure 2). It was not detected in the



Fig. 2: CT showing tip of the pericardial catheter in left lobe liver abscess (shown by white arrow)

pericardium as expected. The catheter did not pierce the pericardium and just advanced into the abscess. We discuss the possible explanation for misplacement of the pericardial catheter and how this resulted in a favourable outcome.

Discussion

Percutaneous pericardial pigtail catheter insertion is a common and essential invasive procedure. Many studies have shown this procedure to be safe, efficient, simple and easy to administer. ECHO guidance has reduced the incidence of catheter-related complications to up to 1.6% [1]. These complications include misplacement leading to cardiac rupture, hepatic laceration, injury to aorta and stomach. Reasons for complications could be in experience in this procedure and complicated anatomy and obesity. In our case, none such reasons were observed. When we received the patient, liver abscess had ruptured into the pericardium causing tamponade. It is a rare complication and is mostly associated with left lobe amoebic liver abscess. Literature shows that left lobe liver abscess can rupture into the pericardium through hepato-pericardial fistula [2].

We attempted to put pericardial pigtail catheter but instead of traversing the pericardium it passed through the sub diaphragmatic region, coiled multiple times and finally positioned into the left liver lobe abscess cavity. This may be due to easy access to the frail tissue tract damaged by necrosis. As we drained the pus, the clinical condition of patient improved dramatically immediately. We thought the pus was draining from the pericardium but it was actually from the liver abscess. In our opinion, drainage of the abscess resulted in release of pressure over heart and pericardium (due to abscess mass) resulting in clinical improvement.

Further as with drainage of the abscess, tension in the abscess decreased; this might have resulted in flow of pus from pericardium to the abscess cavity through hepato-pericardial fistula and thus draining the cardiac tamponade also (Figure 1). As the patient improved and we could collect pus from the catheter we did not bother to look at the position of the catheter on ECHO which was actually in the abscess cavity. This was detected later on in CT scan. Improvement of patient blocked our thinking process and we thought procedure has gone all right. Every case may not be that lucky so we suggest that in the presence of adjoining necrosis process, extreme caution should be taken while putting a pericardial catheter.

There are only a few cases reporting the misplacement of the catheter. Maximilian et al reported the penetration of the catheter into the liver and inferior vena cava [3]. Another report showed a pericardial catheter that severed on attempted removal. Surgery was required to remove the retained portion. They hypothesised that shear forces due to heart movement and the angle of catheter entry into the pericardium caused the catheter disruption [4]. Alpat et al. reported a case where the catheter penetrated the stomach and diaphragm before entering the pericardium [5]. This case also supports our hypothesis as malignant tissues may be fragile and may act as low resistance path. All these cases had complications requiring intervention but in our case misplacement had been favourable. The misplaced pericardial catheter drained the cardiac tamponade as well as liver abscess. Our patient is in follow up and in good health.

Abbreviations:

Echocardiography (ECHO),
computed tomography (CT)

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