CASE REPORT

BILATERAL PLEURAL EFFUSION AFTER CENTRAL VENOUS CATHETERIZATION- A RARE COMPLICATION

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ABSTRACT

Central venous Catherization (CVC) is rarely complicated by pleural effusion. It is usually due to malpositioned catheter. Our patient was a 35-year-old man admitted with Menningoencephalitis.A cervical central vein catheter was placed into his right jugular vein after induction of anaesthesia in Emergency Room. In chest x ray we encountered bilateral pleural effusion and drained it with a chest tube. During following days the patient has daily drainage of almost 1.7 liter of clear yellowish fluid from chest tube. Fluid analysis was not diagnostic. We removed the central vein catheter and plural drainage was stopped.

Keywords: Central venous Catheterization , Pleural effusion

INTRODUCTION

Central venous catheterization (CVC) can cause various complications. The use of a central venous catheter may occasionally be associated with complications like sepsis, effusions and thrombosis. Migration of the central catheter is an unusual complication that often goes unrecognized. Our case report, however, describes a complication occurring after internal jugular venous catheterization, which is difficult to explain with our current knowledge of anatomy. This case report is of a adult male who developed bilateral pleural effusion resulting from a migrating central line and highlights the need for a high level of clinical suspicion in diagnosing catheter related problems.

CASE STUDY

A 35-yr-old man with a 3-day history of severe headache, fever vomiting and altered sensorium was admitted in Emergency.Initial clinical and laboratory evauluation revealed the diagnosis of acute pyogenic meningoencephalitis. On examination patient was in shock with Blood Pressure of 80/50 mm Hg on arrival, with GCS of $E_3V_3M_5$. Chest radiograph on arrival was normal (fig. 1). In emergency room a 15cm 7F central veinous catheter (certofix® TrioB Braun Melsungen AG) was inserted in internal jugular vein on right side. Central venous catheterization was done by a senior postgraduate under the supervision of a senior resident and all the ports were checked for blood aspirate. Eventually patient dropped his GCS and got intubated and was shifted to intensive care unit. On day 2 of admission patient showed increased requirement of ventilatory settings, was able to maintain saturation only on fio_2 of more than 0.8 along with increased doses of sedatives paralytics were required, and chest examination revealed signs of right sided pleural effusion. Chest X-ray was repeated that was suggestive of right sided pleural effusion. (fig 2). Pleural fluid analysis was done that was insignificant. A repeat X- ray on 2nd day of ICU admission showed increased pleural effusion on right side as well as left sided effusion, (Fig 3) and patient used to remain hypoxemic on maximum ventillatory support.Bilateral intercostal chest drain was placed and around 1200 ml of serous fluid was drained gradually from right pleural cavity and 500ml from left side. Suspicion of central line malpositioning was made aspirate was checked from all the ports that was serous. Central venous catheter was immediately removed after establishing a peripheral access. Gradually the intercostal drain output decreased and chest X-ray was repeated after two days that showed markedly decreased effusion,(fig 4) ventillatory settings also decreased .Patient was managed in ICU for one week with mechanical ventilation , antibiotics (ceftriaoxe and vancomycin) and other supportive measures.

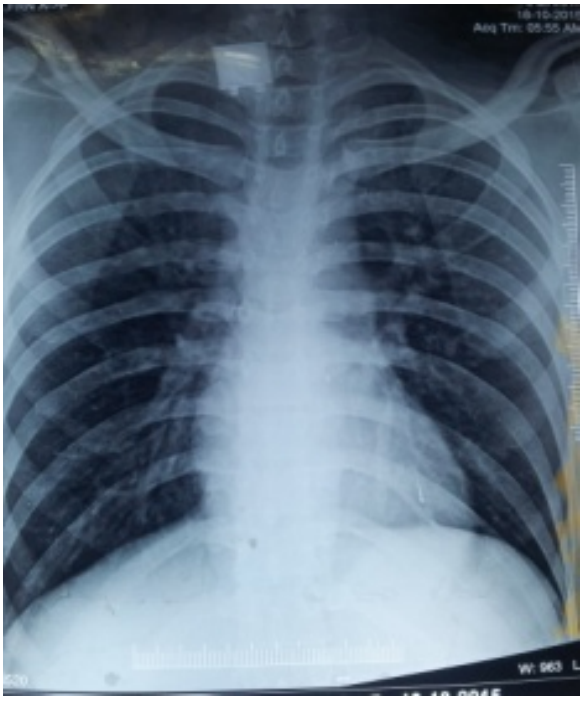

Figure 1: Chest X-ray on admission to emergency.

Figure 3: Chest X-ray on 3rd Day of ICU admission showing bilateral involvement.

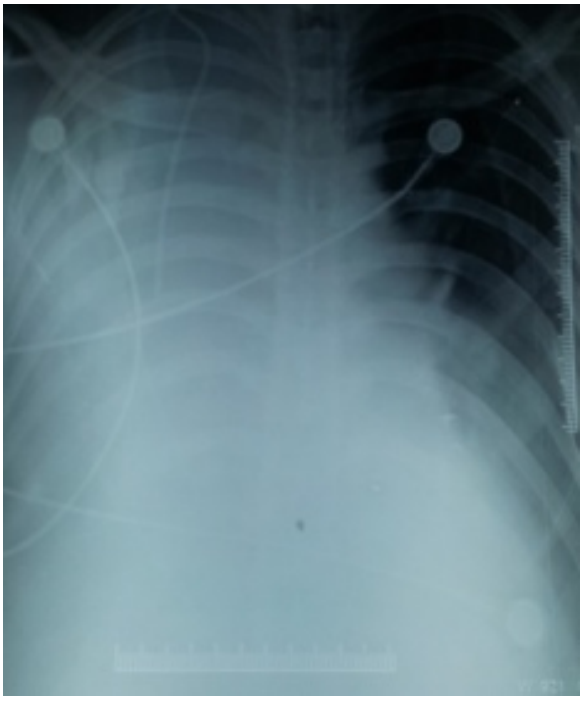

Figure 2: Chest X-ray on 2nd day of ICU showing right sided pleural effusion.

Figure 4: Chest X ray after removal of CVC and Intercostal tube drainage.

Intercostals tube drain was removed on fifth day. Patient was discharged after two weeks from the parent department ward in a stable condition.

DISCUSSION

Insertion of a CVC has been associated with both immediate and long term complications. Catheter malposition, pneumonia and hemothorax are immediate complications usually secondary to the insertion procedure. Late complications are occlusion, thrombosis, sepsis and catheter tip migration.[1] There have been many case reports of CVC tip migration leading to pericardial effusion and cardiac tamponade.[2,3] Various explanations have

been given for the extravascular exudation of fluid. Some authors have hypothesized that hyperosmolar parenteral infusate, high acidity or alkalinity may have contributed to the erosion, e.g., total parenteral nutrition, antibiotics infusion (vancomycin) and sodium bicarbonate. could cause endothelial damage and subsequent increase in vascular permeability leading to an effusion.[4,5,6,7] Phlebitis as a result of the infection could has been postulated to weaken the vessel wall and led to the perforation.[8] Migration of the catheter tip may occur because of movement of the head and extremities. It is also generally accepted that flushing of the CVC by nursing staff could aid in line migration.[9] The ideal position of the catheter tip is at the SVC-right atrial junction or in the inferior vena cava at the level of the diaphragm.[10]

Catheterization via the internal jugular vein may result in fewer malpositions than catheterization via the subclavian vein.[10] Generally, catheterization via the left internal jugular vein results in more malposition and vascular perforation than a catheter placed from the right internal jugular vein. This is because the right internal jugular vein runs into the right brachiocephalic vein in a fairly straight course whereas the left internal jugular vein forms a greater bend when it becomes the left brachiocephalic vein.[10]. Catheter tip migration is a recognized phenomenon following central venous catheterization, occurring to some degree in approximately 17% of all percutaneously introduced catheters.[10,11] Poor position or aberrant location from catheter tip migration has been shown to occur in up to 6% of catheters.[12].

In many instances, as in the present case, the infusion pump does not usually signal an occlusion in cases of tip migration leading to effusions. Thus, the present case report reinforces the need for a high level of clinical suspicion of a catheter related problem in patients with cardio-respiratory insufficiency. The need for serial X-rays, especially contrast-aided radiographs, is also clearly demonstrated in this case. This is a rare complication that is yet to be satisfactorily explained.

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