

Delayed Haemothorax due to Indwelling Right Internal Jugular Vein Central Venous Catheter (Case Report and Review of Literature)

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Received January 18, 2019; Revised February 20, 2019; Accepted April 10, 2019

Abstract Delayed development of a haemothorax after central venous cannulation of the right internal jugular vein is extremely rare. Awareness of this rare complication by the trauma surgeon is essential to avoid attributing the complication to a missed thoracic injury. Prompt chest x-ray is necessary to confirm the diagnosis. Removal of the central line followed by tube thoracostomy remains the mainstay of management. A case of delayed haemothorax following central venous cannulation of the internal jugular vein is presented to highlight this complication followed by a brief review of literature.

Keywords: haemothorax, central venous cannulation neck vein

Cite This Article: Ketan Vagholkar, Yash Kripalani, Shivangi Garima, and Suvarna Vagholkar, "Delayed Haemothorax due to Indwelling Right Internal Jugular Vein Central Venous Catheter (Case Report and Review of Literature)." *American Journal of Medical Case Reports*, vol. 7, no. 4 (2019): 56-58. doi: 10.12691/ajmcr-7-4-1.

1. Introduction

Central venous catheterization (CVC) is one of the commonest vascular access procedures performed in intensive and emergency care units. Despite the availability of ultrasound guided procedures yet complications occur. [1] These may be fatal in a few instances. Haemothorax can develop in the immediate post procedural course. However a delayed development of a haemothorax may be misleading and may lead to a suspicion of a missed thoracic injury especially in trauma patients. A case of delayed haemothorax developing on the fifth postoperative day in a case of blunt abdominal trauma is reported with a view to create an awareness of this complication due to central venous cannulation.

2. Case Report

A 27 year old female construction worker was brought to the emergency department with alleged history of fall from a height of 20 feet. She had fallen on the left side. There was no history of unconsciousness or injury to the head, face and neck region.

On examination the patient was conscious and oriented. Pulse was 110 beats per minute, BP was 100/60 mm of Hg and respiratory rate was 26 per minute. Patient was pale. However there was no cyanosis. There were imprint abrasions of the clothing on the left lateral chest and abdominal wall. There was palpable crepitus

in the lower region of the left hemi thorax suggestive of rib fractures.

Per abdominal examination revealed severe tenderness in the abdomen more on the left side. Significant guarding was also present in the left upper abdomen.

Respiratory system revealed decreased respiratory movements on the left side. However the air entry was normal on both sides.

Examination of the cardiovascular and neurological system did not reveal any positive findings.



Figure 1. Chest x ray on admission showing only rib fractures on the left side

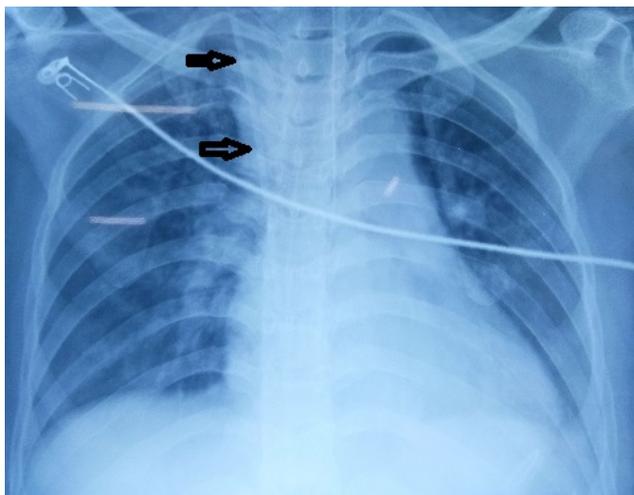


Figure 2. Post procedural chest x-ray (on the day of admission) showing the CVC marked by black arrows (No haemothorax or pneumothorax)



Figure 3. Chest x ray on post-operative day 5 showing a haemothorax



Figure 4. Complete resolution of the haemothorax after tube thoracostomy and removal of the CVC

Laboratory investigations were carried out which showed a haemoglobin concentration of 9.5mgm% and a haematocrit of 28. Other laboratory investigations were normal. Chest x-ray revealed fracture of the ribs on the

left side. The rest of the chest was normal. (Figure 1) A peripheral venous line was placed and resuscitation commenced. In view of the need for aggressive resuscitation and laparotomy a central line was placed in the right internal jugular vein. A post procedure chest x ray was taken which should optimum position of the central venous catheter and absence of any haemo or pneumothorax on the right side after the procedure. (Figure 2) The patient was resuscitated aggressively. Having attained haemodynamic stability a thoraco abdominal CT scan was done. It revealed a perisplenic haematoma with a haemoperitoneum.

The patient underwent exploratory laparotomy with splenectomy. She was transfused with 3 units of packed cells and 2 units of fresh frozen plasma. The postoperative recovery was uneventful with full recovery. Oral feeds were commenced on postoperative day 4 after she regained normal peristalsis. On postoperative day 5 she suddenly developed breathlessness with fall in her saturation. A chest x-ray was done which showed an effusion in the right haemothorax. (Figure 3) A thoracocentesis was done which revealed blood. A tube thoracostomy was done on the right side. Approximately 200 cc of blood drained through the chest tube. The patient then started breathing comfortably. Chest x ray revealed complete drainage of the haemothorax. (Figure 4) The right internal jugular central venous line was immediately removed. The intercostal drain was removed 4 days after its insertion. Patient was discharged on the 12th postoperative day.

3. Discussion

Serious chest complications can occur after percutaneous placement of internal jugular and subclavian central venous catheters (CVC). The incidence varies from 5-19%. [1] These include pneumothorax, haemothorax, hydrothorax, vascular injuries and cardiac tamponade. Haemothorax is a very serious complication and can be life threatening if not picked up immediately. The incidence of haemothorax as an isolated complication is very less that is 1%. It can occur at the time of CVC insertion or in early post procedural period. This is usually attributed to venous injury to the innominate vein or even the superior vena cava during the course of internal jugular or subclavian vein catheterization. Inadvertent arterial injuries have also been reported which can lead to exsanguinating haemorrhage within the thoracic cavity. [1] The site of vascular perforation usually decides the presentation. If the vessel is perforated below the pericardial reflection then it can lead to a hydropericardium or haemopericardium leading to cardiac tamponade. If the vascular perforation occurs above the pericardial reflection seen in only 0.4-1% of cases then it can lead to a haemothorax or a hydrothorax. Delayed haemothorax developing days after a CVC placement can possibly result from perforation by the catheter tip or from superior vena caval erosion. Usually right sided CVC insertion is much safer than the left side. [1] This is because of the parallel position of the catheter shaft to the vessel wall. [2,3] The tips of internal jugular or subclavian CVC tips usually move up to 2 cms after insertion in adults with head, neck and respiratory movements. In the case presented the CVC tip may possibly have migrated with chemical

vessel damage thereby contributing to perforation and haemothorax. [4,5]

Clinical features of delayed haemothorax include sudden onset of breathlessness with accompanying oxygen desaturation. The presence of an ipsilateral CVC in the neck veins should immediately raise the suspicion of a delayed haemothorax. Awareness of this rare complication is of utmost importance to the surgeon. The doubt of having missed a traumatic injury should not be considered in such circumstances. Thereby preventing unnecessary investigations and delay in administering prompt lifesaving treatment. A chest x ray should be done immediately to document the diagnosis followed by insertion of a chest drain as was done in the case presented.

4. Conclusion

Haemothorax developing on the same side of the CVC in the neck veins should always be attributed to a complication of CVC placement irrespective whether it develops immediately, or in a delayed circumstance.

Chest x ray is necessary to confirm the diagnosis.

Tube thoracostomy is therapeutic.

Acknowledgements

The authors would like to thank the Dr. Surekha Patil, Dean of D.Y.Patil University School of Medicine,

Navi Mumbai, India for permission to publish this case report.

The authors would also like thank Parth K. Vagholkar for his help in typesetting the manuscript.

Conflict of Interest

None. Consent of patient taken.

Funding

None.

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