

Right Atrial Compression by Chest Drain in Premature Neonate

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Abstract

Presentation

On day 6 of age an extremely premature infant underwent cardiopulmonary resuscitation including right sided chest drain insertion for bilateral tension pneumothoraces.

Diagnosis

On day 11 of age an echocardiogram was performed for research purposes and a right sided chest drain was seen to abut the right atrium with associated compression of the right atrium.

Treatment

The chest drain was repositioned. Repeat echocardiography was performed to ensure resolution of right atrial compression

Conclusion

Although very rare, compression or perforation of the heart from malpositioned chest drains has the potential to cause serious or even fatal complications. Clinicians should be aware that such complications may be detected on neonatal echocardiography.

Keywords: Neonatology, Echocardiography, Pneumothorax, Chest Drain

Case Report

A 24+4 week infant was born via forceps vaginal delivery. Following delivery the baby was intubated and ventilated and received two doses of surfactant. On day 6 of age the infant suffered a cardiorespiratory collapse requiring cardiopulmonary resuscitation, endotracheal and intravenous adrenaline and bilateral needle aspiration for bilateral tension pneumothoraces.

During this resuscitation an emergency right sided chest drain was inserted following which the patient returned to haemodynamic stability. Over the following days the baby required further right and left sided chest drains to be inserted for repeated bilateral air leaks. On day 11 of age an echocardiogram was performed for research purposes and a right sided chest drain was seen to abut the right atrium with associated compression of the right atrium. A right sided pericardial effusion was also noted (Figure 1a). During this period the baby was haemodynamically stable with a normal heart rate and blood pressure. A CXR performed earlier that day demonstrated that 'The ET tube is in the upper third of the trachea. The Nasogastric tube is in a satisfactory position. The right sided chest drain appears in a satisfactory position. Apparent complete resolution of the right pneumothorax. Extensive left pulmonary interstitial emphysema, with expansion of the left lung. This results in shift of the mediastinal structures to the right' as per consultant paediatric radiologist assessment. The clinical team were immediately informed of the echocardiography findings and the chest drain was repositioned. Repeat echocardiography was performed to ensure resolution of right atrial compression (Figure 1b).

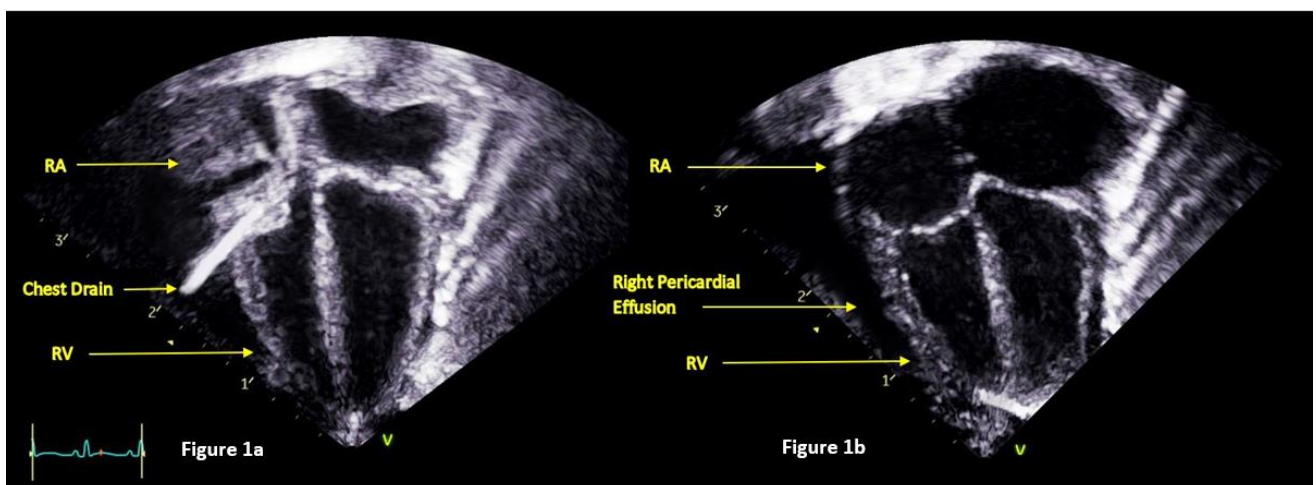


Figure 1(a): Compression of right atrium (RA) with right sided pericardial effusion, Figure 1(b): Resolution of right atrial compression following repositioning of right sided chest drain.

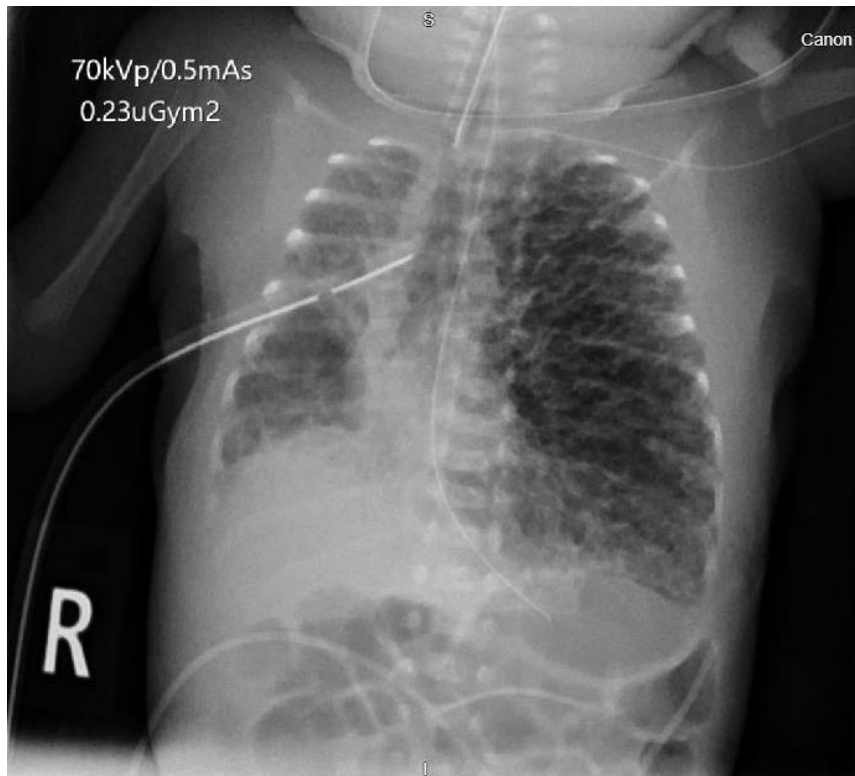


Figure 2: CXR performed earlier the same day as echocardiogram.

Discussion

Pneumothoraces are a common complication of prematurity and respiratory distress syndrome which are often managed with chest drain insertion. Needle aspiration is an effective management strategy for neonatal pneumothorax and chest drains may be utilised when needle aspiration of the pneumothorax has failed⁴. Although very rare, compression or perforation of the heart from malpositioned chest drains has the potential to cause serious or even fatal complications¹⁻³. Such findings may not always be readily visualised on xray. Clinicians should be aware that such complications may be detected on neonatal echocardiography.

Declaration of Conflicts of Interest:

None declared.

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