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IMAGES IN ANESTHESIA

Massive pneumopericardium

Victor Tran, MD

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A 25-yr-old man (who consented to this report) was admitted to our hospital following a head-on, high-speed, unrestrained motor vehicle accident. Upon arrival at the hospital, the patient required aggressive fluid resuscitation and high-dose norepinephrine and vasopressin infusions to maintain a mean arterial pressure of 60 mmHg. The computed tomography (CT) scans showed multiple fractures, extensive subcutaneous emphysema, pneumomediastinum, bilateral pneumothoraces and a massive pneumopericardium.

Despite ongoing resuscitation and bilateral chest thoracostomy, the patient became progressively more hemodynamically unstable. Pericardiocentesis was attempted but was hampered by poor echocardiographic visualization due to subcutaneous emphysema. The consulting cardiac surgical opinion was that the degree of pneumopericardium was unlikely to contribute to the hemodynamic conditions (Figure). Nevertheless, continuing hemodynamic instability prompted a subxiphoid pericardial window 14 hr after hospital admission. No evidence of tension pericardium was noted, and the patient remained unstable. Right ventricular dysfunction on a subsequent transesophageal echocardiogram and a high sensitivity troponin level of

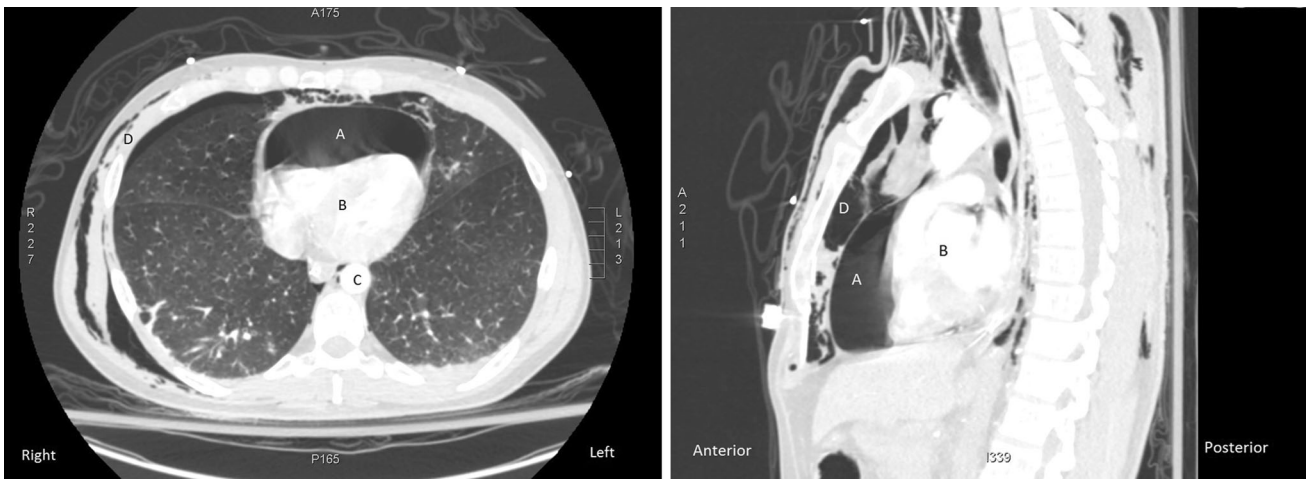

Figure Transverse and sagittal thoracic computed tomography images show evidence of massive pneumopericardium (A) anterior to the heart (B) and aorta (C). There is also right-sided pneumothorax and significant subcutaneous emphysema (D)

V. Tran, MD (✉)
University of Manitoba College of Medicine, Winnipeg, MB, Canada
e-mail: victortran247@gmail.com

1234 $ng \cdot L^{-1}$ were consistent with myocardial contusion. Transesophageal echocardiography performed at one week showed that the myocardial contusion had resolved, although the patient required prolonged ventilation for three weeks secondary to the significant pulmonary contusion causing acute respiratory distress syndrome.

Pneumopericardium is defined as air within the pericardial space. Its most severe form is tension pneumopericardium. Its etiology is typically due to trauma, iatrogenic injury, mechanical ventilation, and infection[1]. Notwithstanding its impressive appearance on CT, our patient's pneumopericardium was unlikely to have contributed to his hemodynamic instability. Thus, the most attributable cause for hemodynamic instability – once the concomitant hypovolemic shock had been corrected – was cardiogenic shock secondary to myocardial contusion.

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Reference

1. *Leung PO*, *Lai CC*. Tension pneumopericardium. J Emerg Med 2014; 46: 687-8.