



Pneumopericardium following tracheal injury with firecracker: A rare presentation

KEYWORDS

Pneumopericardium, Neck Trauma, Pericardial space

Dr. Amrit Pal Singh Rana

Assistant Professor, Department of Surgery, GGS Medical College Faridkot

Dr. Manjit Kaur

Assistant Professor, Department of Pathology, GGS Medical College Faridkot

ABSTRACT Pericardial air spread due to blunt and penetrating trauma to the chest or due to iatrogenic injury is a relatively rare consequence, which may prove life threatening if not taken care of. Detailed analysis of neck and chest images in patients with history of trauma are required to diagnose the condition as early as possible. Being tension pneumopericardium its fatal complication, close monitoring and immediate emergency attention is mandatory. We report a unique case of penetrating neck injury with a projectile from a firecracker in 15 years old boy presenting with subcutaneous emphysema and pneumopericardium.

INTRODUCTION

Pneumopericardium, a collection of air or gas in pericardial space, is rare and may be caused by (a) trauma e.g. blunt and penetrating chest injury, barotraumas due to positive pressure ventilation, asthma, also associated with cocaine inhalation (b) fistulation between pericardial space and air containing structure like bronchial tree, lung, gastrointestinal tract and (c) infection by gas forming bacteria. [1] It generally occurs after high-speed blunt deceleration injuries. Although it is generally relatively limited and benign but may become hemodynamically significant. [2]

Case Report:

A fifteen year old male presented in emergency ward with history of trauma neck with a projectile from firecracker. On examination patient was calm and conscious sitting comfortably. There was stoma of 2x2 cms size over anterior neck communicating with trachea about three centimeters above suprasternal notch. Subcutaneous emphysema was present in neck. There was no difficulty in respiration and swallowing. Oxygen saturation was 96%. Xray chest revealed pneumopericardium (Figure 1) while there were no features of pneumothorax. CT scan of chest including neck confirmed presence of air in pericardium (Figure 2) and surgical emphysema in neck. Margins of skin around the stoma debrided and stoma covered and closed. The patient was kept under monitoring observation. During hospital stay his condition remained stable and was discharged after thirteen days.



Figure 1: PA view of the chest x-ray displaying air in the pericardium.

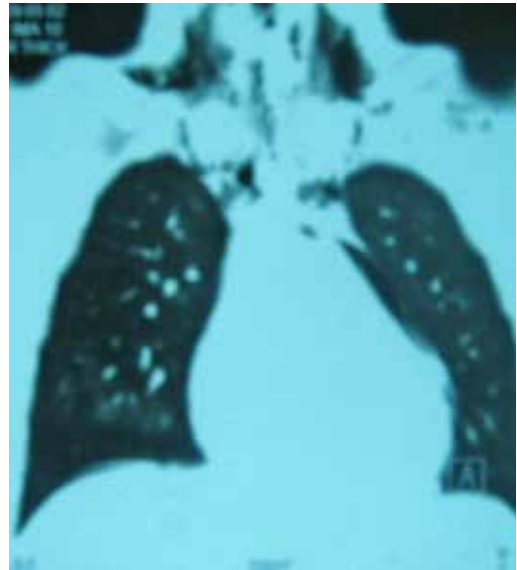


Figure 2: Thoracic CT scan displaying pericardial air spread.

Discussion

Traumatic pneumopericardium may be associated with blunt or penetrating injury of neck, later being extremely rare [3]. Besides pulmonary pathology subcutaneous emphysema of neck can arise due to hypopharyngeal, esophageal or tracheal perforations that usually occur due to penetrating rather than blunt neck injuries [4]. It usually takes a benign course and needs only monitoring and observation. It is usually self-limiting and does not need specific treatment and most patients recover within one or two weeks [2,5]. As per literature 37% of pneumopericardium complicated to tension pneumopericardium and thus demands immediate intervention [5, 6]. This may be due to persistent air leakage that must be stopped immediately. The air may be trapped through one-way valve mechanism creating pressure between heart and pericardium [2,5]. The air leak from damaged trachea into the plane between the trachea and paratracheal fascia can track down into the pericardium causing a pneumopericardium possibly due to Macklin effect [5]. If mechanical ventilation is applied in this condition, a dangerous temponade can

be developed and emergency pericardiocentesis or surgery may be required [2]. So to overcome the fatality, continuous monitoring of blood pressure and the availability of an immediate facility for invasive drainage of pericardium should be taken care of [5,7].

Diagnosis of pneumopericardium, a rare complication of chest trauma depends on careful clinical examination supported by imaging findings of chest. Although it is self limiting requiring no specific therapy. But vigilance and a continuous monitoring of vital signs is necessary to rule out tension pneumopericardium, which may prove life threatening and requires immediate attention with well equipped high dependency care unit.

REFERENCE

1. Stacey S, Green AW, Best RA. A case of spontaneous tension pneumopericardium. *Br J Cardiol* 2004;11:32-14. | 2. Haan JM, Scalea TM. Tension pneumopericardium: a case report and a review of the literature. *Am Surg.* 2006;72(4):330-1. | 3. Chan O, Hiorns M. Chest Trauma. *Eur. J Rad.* 1996;23:23-34 | 4. Giger R, Friedrich JP, Dulguerov P, Landis BN. Pneumopericardium after manual strangulation. *Am. J Med*;2004;116,11:788-90 | 5. Ganie FA, Lone HU, Lone GN, Singh S, Dar AM, Bhat MB et al. Traumatic pneumomediastinum: A risk factor for the development of pneumopericardium. *Intern J St Res.* 2013;3(1):7-10. | 6. Cummings RG, Wesly RL, Adams DH, Lowe JE. Pneumopericardium and cardiac tamponade. *Ann Thor Surg.* 1984;37:511-8. | 7. Sun GR, Goosen J, Florizoone M. Cardiac tamponade secondary to tension pneumopericardium from penetrating chest trauma. *S Afr Med J.* 2010;100(3):150. |