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POLY-TRAUMA WITH PNEUMOPERICARDIUM AFTER ROAD TRAFFIC ACCIDENT IN A 22 YEARS OLD MALE: CASE REPORT

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Abstract:
Pneumopericardium is defined as the presence of the air inside the pericardial space. It's Rarely developed after blunting trauma, commonly it's a symptomatic but in some cases, it may be developed to a cardiac tamponade and become a life-threatening situation. Diagnosis is done through an erect chest X-ray. Echocardiography and chest computed tomography scans can also support the diagnosis. Here is the report about 22 years old male patient, medically free came to the emergency department as a case of poly-trauma after road traffic accident with severe head injuries. Diagnosed as a case of pneumopericardium caused by blunt trauma after a road traffic accident. patient intubated and ventilated and bilateral ICD inserted, patient had refractory hypoxemia managed by lung protective strategy but low peep as the patient was peep unresponsive, patient treated for 39 days during which patient had tracheostomy. Finally, patient condition improved weaned from ventilator tracheostomy removed and discharged from hospital in good condition without any residual defect.

Keywords: *Pneumopericardium, Polytraumatic, Road traffic accident.*

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INTRODUCTION:

Pneumopericardium is a rare disease defined as the presence of air or gas in the pericardial sac. Among the etiological factors, the following stand out: chest trauma, barotrauma, air-containing fistulas between the pericardium and the surrounding structures, secondary gas production by microorganisms growing in the pericardial sac, and iatrogenic factors. Until now, spontaneous pneumopericardium has been considered a harmless and temporary state, but a review of clinical cases indicates that the presence of air in the pericardium can lead to cardiac tamponade and life-threatening hemodynamic disturbances. We present the case of a 22-year-old patient poly-trauma with a Pneumopericardium and severe head injuries after road traffic accident.

CASE REPORT:

A 22-years old male patient, not known to have any medical issues. He was brought by red crescent to the emergency department after involved in road traffic accident and thrown out of car. Trauma code announced, vital signs on arrival to emergency department revealed the blood pressure was 170/85 mmHg, pulse was 135 beats/min.

On examination, GCS 8/15, pupils bilaterally constricted and non-reactive, bilateral Raccoon eyes, multiple abrasions on face and left chest, decrease air entry in chest and abdomen soft and lax. Fast was –ve. Foleys catheter was inserted and clear urine output. No obvious deformity of extremity. He was intubated, ventilated and bilateral ICD inserted.

Chest X-ray AP view showed Bilateral lung infiltration due to bilateral lung contusion and bilateral Intercostal drain. (Fig 1) CT chest with contrast showed Extensive emphysema noted throughout the mediastinum suggestive of extensive pneumomediastinum. (Fig 2)

Patient was admitted in ICU as a case of poly-trauma with pneumopericardium and severe head injuries. The patient had refractory hypoxemia managed by lung protective strategy but low peep as the patient was peep unresponsive, patient treated for 39 days during which patient had tracheostomy. Finally, patient condition improved weaned from ventilator tracheostomy removed and discharged from hospital in good condition without any residual defect.

DISCUSSION:

Pneumopericardium is a rare medical condition defined as the presence of air or other gases in the pericardial cavity. It was first described by Bricheteau in 1844. Subsequently, James documented 38 cases in 1904, and Cowen et al. described 43 cases in 1914. In 1931, Shackelford concluded that the presence of air in the pericardium is not harmful based on the analysis of 77 cases. Without encountering hemodynamic disturbances, Oppenheimer evacuated 800 ml of fluid from the pericardial sac and, subsequently, introduced 500 ml of air. A more comprehensive analysis of the presence of air in the pericardium was conducted by Adcock et al.: the researchers noted that hemodynamic disturbances occurred when intrapericardial pressure more than the value of 145 mm H_2O, which corresponds to a rapid introduction of 60 ml of air into the pericardial cavity. Maurer et al. demonstrated that the speed with which the air is introduced is the main factor behind the development of cardiac tamponade – if the air enters gradually, the pericardium can contain up to 500 ml without hemodynamic changes. Other studies showed that the pericardium can have 1000 ml of blood without signs of tamponade [1]. In order to maintain proper venous pressure, and hemodynamics must be exceeding intrapericardial pressure by 35 mm H_2O. Symptoms of cardiac tamponade develop when intrapericardial pressure exceeds the value of 266 mm H_2O [1]. Pneumopericardium was used to treat tuberculous pericarditis with accompanying exudate. Historically, pneumopericardium was also employed for diagnostic purposes in order to distinguish between intracardiac and extracardiac lesions, diagnose constrictive pericarditis, or locate foreign bodies within the heart [1] – currently, these procedures have been replaced with other diagnostic methods.

The causes of pneumopericardium can be classified into 4 major types:

1. dull or penetrating chest injury and barotrauma, often caused by positive pressure ventilation (and most often encountered in neonates), severe asthma, prolonged exertion with repeated Valsalva maneuvers, or cocaine inhalation;
2. fistulas between the pericardium and air-containing organs and structures (e.g., the bronchi, esophagus, stomach, an air chamber in the pleural cavity, or a lung abscess);
3. secondary production of gas by bacteria inhabiting the fluid in the pericardial sac, such as Clostridium perfringens or Klebsiella;
4. iatrogenic, e.g., during esophagoscopy or trephine biopsy of the sternum, or after epigastric procedures
5. [1–10].

CONCLUSION:

Pneumopericardium is a rare disease defined as the presence of air or gas in the pericardial sac, caused by multiple etiologies. spontaneous

pneumopericardium has been considered a harmless and temporary state, but a review of some clinical cases indicates that the presence of air in the pericardium can lead to cardiac tamponade and life-threatening hemodynamic disturbances and symptoms developed when intracardial pressure exceeds the value of 266 mm H_2O. The management is depending in the severity of the cases it might be treated conservatively and in some cases, need to surgical drainage of pericardial sac.

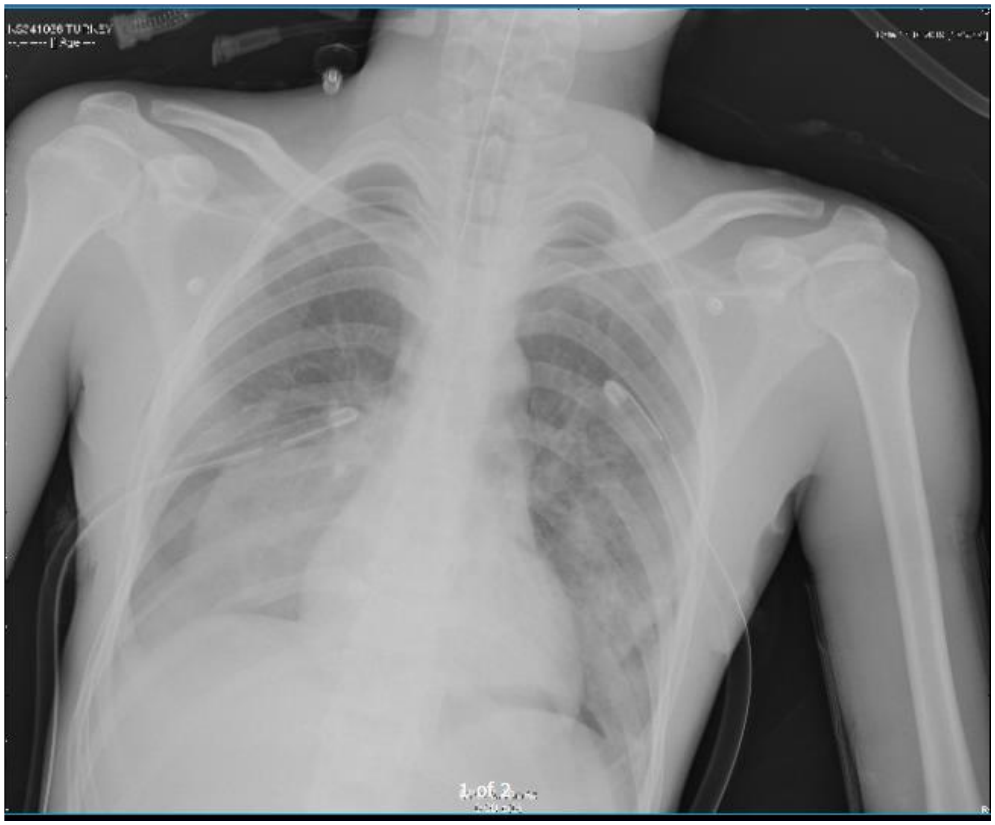

Fig 1: Chest X-ray showed Bilateral lung infiltration due to bilateral lung contusion and bilateral intercostal drain

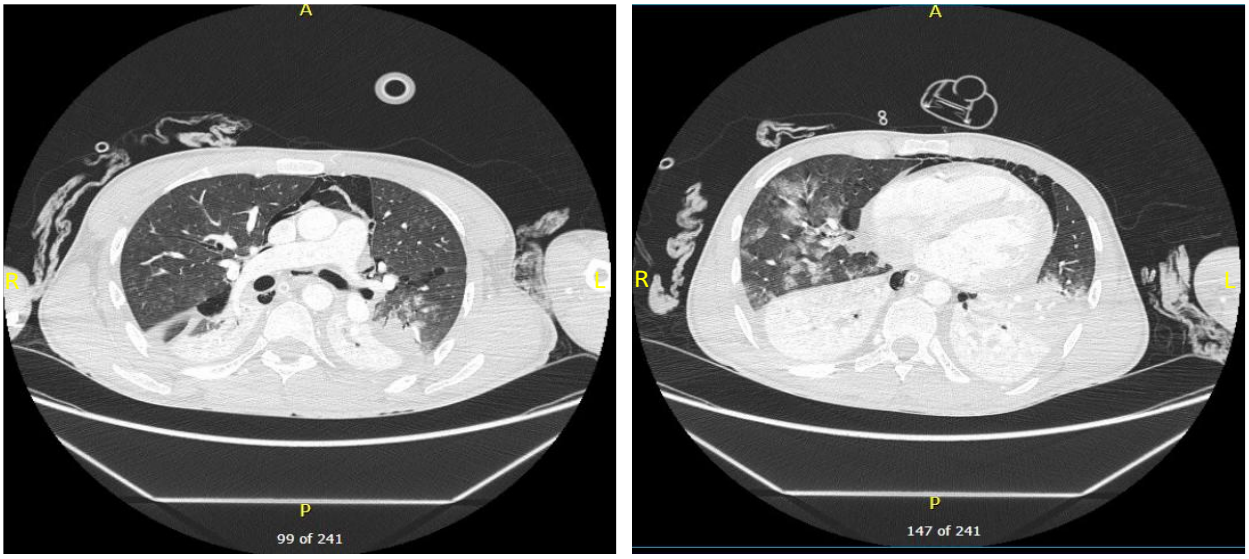

Fig 2: CT chest with contrast showed Extensive emphysema noted throughout the mediastinum suggestive of extensive pneumomediastinum.

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