

A Rare Trauma Complication: Pneumopericardium

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Abstract

Pneumopericardium is a rare condition that is defined as the presence of free air in the pericardial space. Although it is secondary to the most frequent traumatic or iatrogenic causes, it can rarely be seen spontaneously. A 32-year-old female patient was brought to our emergency service by 112 due to a car accident. Radiological imaging of the patient revealed spinous process fracture in thoracic vertebra (ninth thoracic vertebra), sacroiliac joint dissociation, iliac wing, pubis, ischium and femur diaphysis fracture. There was minimal free fluid under the spleen and the pelvis. Thorax tomography revealed multiple rib fractures and fractures in the left clavicle. In addition, wide spread contusion and hemopneumothorax were observed in the left lung. In addition, air density was determined in the pericardial space and mediastinum. Consultations were requested for the patient and the patient was admitted to the intensive care unit for further examination and treatment. Pneumopericardium can be defined as the presence of air in the pericardial space. In case of clinical suspicion for diagnosis of pneumopericardium, further investigation with thorax tomography and echocardiography is required. In the emergency services, which are the first referral places of multiple traumas, they should keep in mind the diagnosis of pneumopericardium in these patients, especially when chest trauma is accompanied by these patients.

Keywords: Trauma, emergency medicine, pneumopericardium

Introduction

Pneumopericardium is a rare condition that is defined as the presence of free air in the pericardial space¹. Although it is secondary to the most frequent traumatic or iatrogenic causes, it can rarely be seen spontaneously². It is usually associated with pneumothorax and pneumomediastinum after blunt chest trauma³. It often limits itself. However, it is a clinical diagnosis that should be considered in patients with blunt chest trauma because of the high mortality rate in case of accompanying tamponade findings⁴.

Case

A 32-year-old female patient was brought to our emergency service by 112 due to a car accident. There were no features in the patient's medical history. The patient had head, chest and pelvic trauma. The Glasgow coma score was 13. In the vital parameters of the patient, blood pressure was 110/60 mmHg, pulse was 117 beats / min, respiratory rate was 22 / minute and fever was 36 °C. Her electrocardiography was consistent with sinus tachycardia. Cardiovascular system examination showed heart sounds deep, no additional sound

or frothman was detected. There were no pathological findings except tachycardia. Respiratory examination showed a decrease in respiratory sounds in the left lung. His abdominal examination was comfortable, there were no defenses or rebounds. There was tenderness in the pelvis and left femoral head. Hemoglobin level was 11.7 g / dL and hematocrit was 36%. Biochemical parameters were alanine aminotransferase 68 U/L and aspartate aminotransferase 148 U/L. After stabilizing the patient, radiological examinations were performed. Radiological imaging of the patient revealed spinous process fracture in thoracic vertebra (ninth thoracic vertebra), sacroiliac joint dissociation, iliac wing, pubis, ischium and femur diaphysis fracture. There was minimal free fluid under the spleen and the pelvis. Thorax tomography revealed multiple rib fractures and fractures in the left clavicle. In addition, wide spread contusion and hemopneumothorax were observed in the left lung. In addition, air density was determined in the pericardial space and mediastinum (Figure 1). Pneumomediastinum and pneumopericardium were considered. An emergency bedside echocardiography was performed. Although air density could not be selected clearly in echocardiography, there was no myocardial pathologic finding. Consultations were requested for the patient and the patient was admitted to the intensive care unit for further examination and treatment. In the intensive care follow-ups,

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lung expansion was achieved with tube thoracostomy and no thoracotomy was performed, and tube thoracostomy was terminated. After stabilizing the general condition, the patient was operated for orthopedic fractures. Echocardiography did not reveal any pathology. The patient was discharged from the intensive care unit after being stabilized.

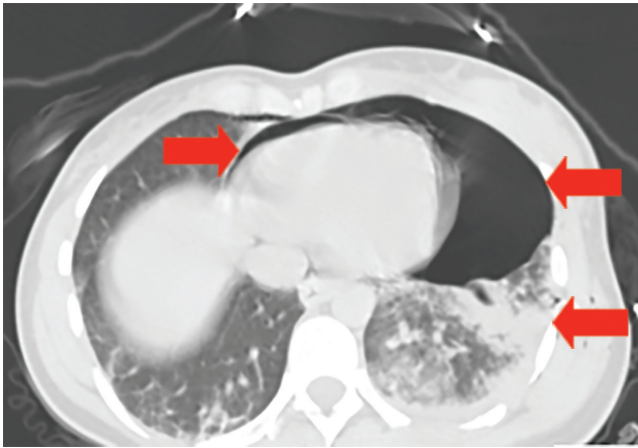


Figure 1. Pneumopericardium together with pneumohemothorax and contusion in the left lung

Discussion

Pneumopericardium can be defined as the presence of air in the pericardial space. It is usually caused by blunt and penetrating trauma or iatrogenic causes. It may also occur spontaneously². The air can pass through the perivascular sheath through a direct connection to the pericardial space, or through the congenital pleuropericardial connection. Although it is usually a self-limiting condition, it may rarely be presented with tension pneumopericardium or tamponade⁵. Simple pneumopericardium may be introduced to the tension pneumopericardium by mask valve ventilation or positive pressure ventilation by mechanical ventilator⁶. Therefore, in patients diagnosed with simple pneumopericardium, follow-up is necessary for tamponade and tension pneumopericardium. The diagnosis of pneumopericardium is difficult. The use of plain radiography in the diagnosis of pneumopericardium is limited, only useful in demonstrating additional pathologies such as pneumothorax and hemothorax⁷. In case of clinical suspicion for diagnosis of pneumopericardium, further investigation with thorax tomography and echocardiography is required. Tomography is highly

sensitive to both the diagnosis of pneumopericardium and to show additional pathologies³. Simple pneumopericardium often limits itself and does not require treatment. Hypotension, tachycardia, deep heart sounds, electrocardiography findings in the presence of low voltage in the precordial leads should be thought of cardiac tamponade and if the diagnosis is made, emergency pericardiocentesis should be performed. Pericardial decompression and pericardial window drainage should be evaluated as definitive treatment³.

Conclusion

In the emergency services, which are the first referral places of multiple traumas, they should keep in mind the diagnosis of pneumopericardium in these patients, especially when chest trauma is accompanied by these patients. It should be noted that in cases such as hypotension and deep heart sounds, tamponade may be developed. Due to the risk of progression of simple pneumopericardium to the tamponade and tension pneumopericardium, these patients should be under cardiac follow-up in intensive care.

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