

74 Year-Old-Man With Pneumopericardium Due to Blunt Chest Trauma: Case Report

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SUMMARY

Pneumopericardium is the presence of air in the pericardial space. It may be seen in the context with severe blunt chest trauma. Usually, pneumopericardium is self-limiting and requiring no specific therapy. However, a continuous monitoring of the electrocardiography and the blood pressure is necessary at an intermediate care unit. We report a 74 year-old-man had been presented with Pneumopericardium, after a car striking. He had bilateral pneumohemothoraces, pneumomediastinum and bilateral multiple rib fractures. Pneumopericardium was disappeared without surgical management like written in english literature. Frequent cardiac and vital signs monitoring and general support treatment were successful in our treatment.

Key Words: pneumopericardium, blunt chest trauma, intensive care unit

74 yaşındaki hastada künt göğüs travmasına bağlı pnömoperikardium: Olgu Sunumu ÖZET

Pnömoperikardium, pericardial boşlukta hava bulunmasıdır. Ciddi, künt toraks travmalarında oluşabilir. Pnömoperikardium, genellikle kendi kendini sınırlar ve özel bir tedaviye ihtiyaç duyulmaz. Bununla beraber, elektrokardiyografi ve kan basıncının sürekli olarak monitörize edildiği yoğun bakım ünitesinde takibi gerekmektedir. 74 yaş erkek hastada; araç dışı trafik kazası sonrasında oluşan, bilateral hemopnömotoraks, bilateral seri kot fraktürleri, pnömomediastinum'un eşlik ettiği pnömoperikardium vakasını sunmaktayız. Literatür bilgilerine paralel olarak, cerrahi bir girişime gerek kalmadan hastanın pnömoperikardiumu kaybolmuştur. Tedavi protokolü olarak; yakın vital bulgu ve kardiak monitörizasyon takibi altında genel destek tedavisi uygulanmış ve yeterli olmuştur.

Anahtar Kelimeler : Pnömoperikardium, künt göğüs travması, yoğun bakım.

INTRODUCTION

Pneumopericardium in adults is a rare disorder and may be seen most commonly after blunt chest trauma in combination with pneumothorax or pneumomediastinum. Motor vehicle accidents (72.2%) and falls (17.1%) are reported to be the most frequent causes of these blunt chest injuries in polytraumatized patients¹. Concomitant injuries and complications of pneumopericardium such as tension

pneumopericardium are the major causes of morbidity and mortality. The aim of us with this report is to emphasize importance of rapid diagnosing, immediate cardiac and vital monitoring, and being aware for complications which might be needed surgical management. We reported a 74 year-old-man had been presented with Pneumopericardium, after a car striking. He had bilateral pneumohemothoraces, pneumomediastinum and bilateral multiple rib fractures. He was diagnosed 5 hours after

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accident and bilateral tube thoracostomies were performed in emergency department. Then he was hospitalized in the Thoracic Surgery Department intensive care unit.

CASE

A 74-year-old man was admitted to our hospital with complaining of increasing thoracic pain, aggravating dyspnea, reduced breathing sounds over the left hemithorax and subcutaneous emphysema at the 5th hour of the high-speed car striking while he had been walking. There were blood pressure of 110/80 mm Hg, and spontaneous breathing of 20/min. In electrocardiography (ECG); T wave negativens in D2, D3, aVF, and low voltage were determined in all derivations. The antero-posterior chest radiography showed bilateral multiple rib fractures(2-3-4-5-6 of the left side and 1-2-3 of the right side),left pneumothorax, bilateral pleural effusion, pneumomediastinum and pneumopericardium (Figure 1). The subsequent axial computed tomography (CT) scan demonstrated bilateral multiple rib fractures, right pulmonary contusion, left pneumothorax, bilateral pleural effusion, pneumomediastinum, nontension pneumopericardium with a maximum diameter of 28mm (Figure 2). Injury Severity Score was 24 points. Bilateral chest tubes were inserted. The patient was transferred to the Thoracic surgery department intensive care unit for clinical observation and breathing training. Continuous monitoring of the blood pressure, central venous pressure, fever, and periodic chest radiography were performed. Thoracic tube drainage was 100cc from the left, and 50cc from the right at the first day. No pneumothorax line, and no pneumopericardium were seen in the chest anteroposterior radiography at the 3rd day, and no drainage from right tube therefore right chest tube was ended at the 3rd day. The left chest tube also ended at the 5th day. ECG showed normal myocardial function at the 6th day. The bronchoscopic aspiration was performed to patient due to obstructive atelectasis related to secretion at the 8th day.

After 2 weeks of follow up, he was stable. He was discharged at the 14th day. He was healthy at the 3rd month of follow up control.

DISCUSSION

Pneumopericardium secondary to blunt chest trauma is generally due to 1 of 3 mechanisms: 1) penetration along pulmonary venous perivascular sheaths from ruptured alveoli to the pericardium, 2) pneumothorax with pleuropericardial tear, or 3) direct tracheobronchial-pericardial communication²

The diagnosis of a pneumopericardium is made by a plain radiography of the chest. The CT examination usually allows a more accurate assessment of the pneumopericardium and concomitant injuries of the chest. This evaluation is 4 to 5 times more sensitive than supine chest radiography at detecting intrathoracic injuries^{3,4}. Also in our patient, plain chest graphies and CT examination showed concomitant thoracic wall and intrathoracic injuries. Usually, the pneumopericardium is self-limiting and requiring no specific therapy. A nontension pneumopericardium may initially appear as asymptomatic but can rapidly and suddenly progress into a life-threatening tension pneumopericardium. Therefore we followed up our patient with frequent ECG, continuous blood pressure, and arteriel blood oxygen saturation monitoring.

Initially, every pneumopericardium is a nontension pneumopericardium. Gorecki et al³ concluded that nontension pneumopericardium in a stable patient, especially associated with lung and pleural injury, may rapidly progress to tension pneumopericardium. Because of intubation and an increase in airway pressure are probable precipitating factors. Especially, patients with concomitant pulmonary contusion and the need of intubation are at high risk to develop a tension pneumopericardium^{3,5}. Our case was under high risk for *morbidity* and mortality such as tension pneumopericardium. Therefore

intensive care unit follow-up period was longer than other blunt chest trauma patients.

In cases of cardiac tamponade caused by tension pneumopericardium, a needle aspiration is required immediately, and a pericardial window with pericardial drainage is to be performed in the operation room^{1,5}. Intensive care unit patient follow-up, provides immediate surgical operation for life saving when needed.

CONCLUSION

Pneumopericardium is a rare disorder after a blunt thoracic trauma. In most cases, the pneumopericardium is self-limiting and requiring no additional therapy. Concomitant injuries of the lung, heart, trachea, and bronchus have to be primarily excluded by CT scan, bronchoscopy, and ECG. Concomitant pneumothorax and hemothorax have to be treated by chest tube inserting. Because of the risk of cardiac tamponade, heart failure, or arrhythmias, all trauma patients with pneumopericardium

should be admitted to the intensive care unit with continuous ECG, blood pressure monitoring, and periodic chest radiography.

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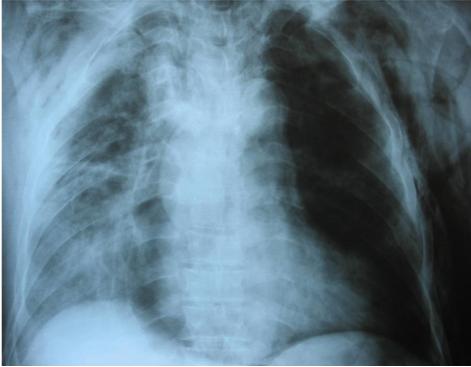


Figure 1: Plain PA Chest graphy of the patient.

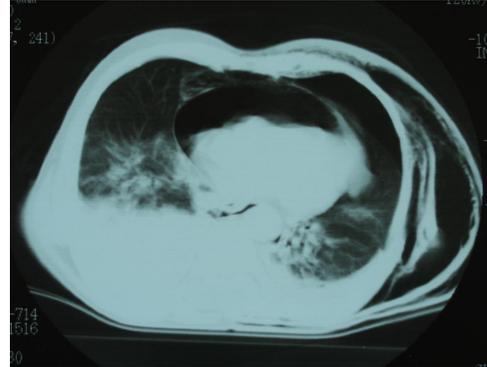


Figure 2: Chest CT of the patient.