CASE REPORT / OLGU SUNUMU

A Rare Cause of Chest Pain: Spontaneous Pneumomediastinum

Göğüs Ağrısının Nadir Bir Nedeni: Spontan Pnömomediastinum

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ABSTRACT

Aim: Spontaneous pneumomediastinum (SPM) is the presence of free air in the mediastinum without any clear reason. It is a rare, self-limiting disease that occurs mostly in young men. Although radiographic imaging is usually sufficient for the diagnosis, thoracic computed tomography may be required in suspicious cases and to determine the etiology. The conservative approach is sufficient in the treatment.

In this report, we present a 23-year-old male patient who presented to the emergency department due to chest pain and was diagnosed with spontaneous pneumomediastinum.

Case: 23-year-old male patient presented to the emergency department with chest pain. His general condition was good, and he was conscious. Systemic physical examination and electrocardiogram were normal. Free air was detected in the paratracheal area on the posteroanterior (PA) chest X-ray. He was admitted to the thoracic surgery service for follow-up and treatment with the diagnosis of pneumomediastinum.

Conclusion: Spontaneous pneumomediastinum should definitely be considered in the differential diagnosis of young patients presenting to the emergency department with chest pain. Clinical suspicion is the most valuable step for the diagnosis of spontaneous pneumomediastinum. Although PA chest X-ray is mostly sufficient for diagnosis, thoracic computed tomography is necessary to determine the etiology and follow-up.

Keywords: Pneumomediastinum, emergency department, chest pain

ÖZ

Amaç: Spontan pnömomediastinum (SPM), kesin bir neden olmaksızın mediastende serbest hava bulunmasıdır. Çoğunlukla genç erkeklerde, nadir görülen, kendi kendini sınırlayan bir hastalıktır. Tanı için genellikle radyografik görüntüleme yeterli olmakla birlikte, şüpheli durumlarda ve etiyolojiyi belirlemek için toraks bilgisayarlı tomografi gerekebilir. Tedavide konservatif yaklaşım yeterlidir.

Bu yazıda göğüs ağrısı nedeniyle acil servise başvuran ve spontan pnömomediastinum tanısı konulan 23 yaşında erkek hasta sunuldu.

Olgu: 23 yaşında erkek hasta göğüs ağrısı şikayeti ile acil servise başvurdu. Genel durumu iyi, bilinci açıktı. Sistemik fizik muayene ve elektrokardiyogram normaldi. Posteroanterior (PA) akciğer grafisinde paratrakeal alanda serbest hava tespit edildi. Pnömomediastinum tanısıyla takip ve tedavi amacıyla göğüs cerrahisi servisine yatırıldı.

Sonuç: Acil servise göğüs ağrısı ile başvuran genç hastaların ayırıcı tanısında spontan pnömomediastinum mutlaka düşünülmelidir. Spontan pnömomediastinum tanısı için klinik şüphe en değerli adımdır. PA akciğer grafisi çoğunlukla tanı için yeterli olsa da etiyolojiyi belirlemek ve takip için toraks bilgisayarlı tomografi gereklidir.

Anahtar Kelimeler: Pnömomediastinum, acil servis, göğüs ağrısı

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Introduction

Pneumomediastinum is defined as the presence of free air in the mediastinum (1-2). It is divided into two groups as spontaneous pneumomediastinum (SPM) and secondary pneumomediastinum (ScPM). SPM occurs in healthy patients with unknown primary cause, usually after Valsalva maneuver, vomiting, or excessive coughing, while ScPM results from trauma, intrathoracic infections, or iatrogenic causes (1,3). SCM is a disease with a generally good prognosis, mostly in young men, characterized by chest pain and cough (4-5). Radiographic imaging is initially preferred for the diagnosis, while computed tomography (CT) should be preferred in suspicious cases and to determine the etiology. Conservative approaches such as resting and analgesia are usually sufficient for the treatment (5-6).

In this report, we present a 23-year-old male patient who presented to the emergency department with sudden onset chest pain during breathing and was diagnosed with spontaneous pneumomediastinum. We aimed to draw attention to and raise awareness of spontaneous pneumomediastinum, which is likely to be missed, especially in young patients who present to the emergency departments with chest pain during rush hours.

Case Report

23 year-old healthy male was admitted to the emergency department with chest pain that started three hours ago. His medical history revealed that the pain started during resting. He had no cough, nausea/vomiting, a history of trauma, was not using a medication, and had not undergone previous intervention. General status of the patient was good, with open consciousness, and Glasgow Coma Scale (GCS) was evaluated as 15. The blood pressure of the patient was measured as 110/70 mm/Hg, respiratory rate as 16/min, pulse as 98/min, and oxygen saturation (SpO_2) as 98%. Electrocardiogram (ECG) showed normal sinus rhythm and there was no change in ST-T wave. The physical exam was unremarkable. Laboratory parameters were in the normal range. Figure 1 shows free air areas in the paratracheal region on the posterior-anterior chest X-ray. Figure 2 shows free air areas on thoracic CT.

The patient was consulted to the department of thoracic surgery with the preliminary diagnosis of pneumomediastinum, and he was admitted to the thoracic surgery ward for follow-up and treatment. Only analgesics were given for the treatment of chest pain. Complaints of the patients regressed at the follow-up, pneumomediastinum areas regressed in control radiographs, and the patient was discharged on the third day of hospitalization. Written informed consent was obtained from the patient for publication of this case report

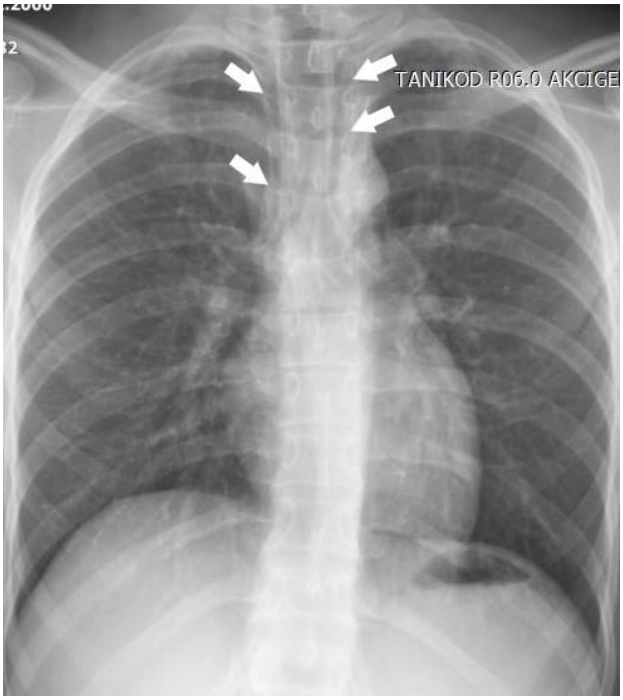

Figure 1: View of free air as a linear band in the paratracheal area in the mediastinum (white arrow).

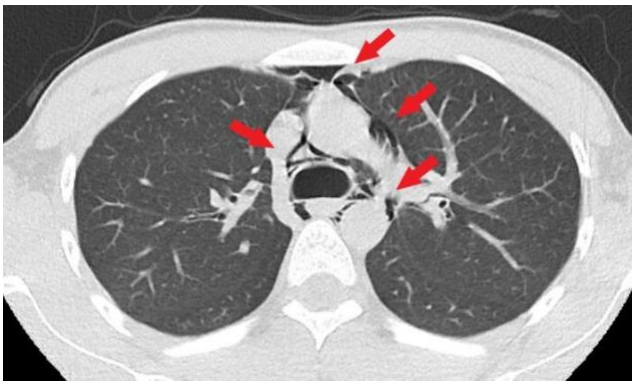

Figure 2: Air images seen anteriorly in the retrosternal region and extending between the pericardial leaves. Mediastinal air images extend through the retropharyngeal space to deep neck level (red arrow)

Discussion

SPM is usually seen as a result of air leaking into the mediastinum due to alveolar rupture in bronchovascular structures because of suddenly increased intrathoracic pressure. Although there are triggers such as cough, vomiting, and heavy physical activity, SPM can also occur independently of these factors. Lung disease or smoking can predispose to this condition (1,5,7-8). Studies have found facilitating factors at different rates (1,9). In a study by Caceres M et al., it was stated that these rates vary according to the physicians who make the inquiry (1). In our case, no facilitation or predisposing factor was found.

The most common symptom in patients with SPM is chest pain, seen in about three-quarters of patients. In addition, nearly half of the patients may have a cough and one-third neck pain (1,5,8). In a study by Khadija C et al., the most common symptom was found as chest pain in 75% of the patients (5). In another study by Caceres M et al., the most

common causes of presentation were found as chest pain, dysphagia and subcutaneous emphysema (1). In addition, it has been reported that mediastinitis due to rupture of the gastrointestinal tract, which is a therapeutic emergency, should also be considered if the patient has symptoms such as dyspnea, dysphagia and fever (5,8). In our case, the patient presented to the emergency department with only chest pain and no other features were detected.

Radiological examinations of the thorax are important in the evaluation and exclusion of secondary causes and are sufficient to confirm the diagnosis (10). The diagnosis of pneumomediastinum can be made with standard posteroanterior and lateral chest radiographs (11). About 70% to 90% of SPM cases can be identified by chest X-ray (12). Radiological signs depend on the quantity and location of the air (13). In the study of Caceres M et al., it is stated that chest radiography (93%) is preferred more than computed tomography (71%) in the diagnosis of pneumomediastinum (1). In a study from Turkey, it was reported that chest radiography (25.8%) is much less preferred than tomography (74.2%) (14). In a study by Fitzwater JW et al., no change was made in the treatment according to the results of thoracic CT taken after radiographic imaging and there was no need for referral to a higher center (8). In a study by Koullias GJ et al., it was stated that all patients should undergo radiographic imaging and CT (15). In addition, it has been stated in other studies that radiographic imaging can be reported as normal in one third of the cases (1,6). Therefore, thoracic CT should be performed in suspicious cases in order to establish the correct diagnosis and determine the etiology. By this way, existing lung pathologies can also be revealed (3,6). In our case, pneumomediastinum was detected in posterior-anterior chest X-ray and CT was then performed to reveal the etiology.

SPM is a disease with a good prognosis that occurs as a result of free air entering the blood circulation within 48-96 hours and regresses spontaneously in approximately 3-4 days. Conservative approaches such as resting, analgesics, oxygen therapy, bronchodilator, or steroids (in asthmatic patients) are in general sufficient for the treatment (3,5,8). The use of prophylactic antibiotics use and restriction of oral intake are not recommended (7). It has been stated that primary surgical repair can be performed in severe cases, and patients with acute respiratory distress can be intervened through tracheostomy, skin incisions over the neck and anterior chest wall (3,5,8). In a study by Dajer-Fadel WL et al., it was emphasized that recognition of clinical data is extremely important in order to choose the best method between conservative approach and life-saving surgical approach in the case of SPM (2). In our case, only analgesics were given as the symptomatic treatment after the patient was admitted to the ward, and he was discharged on the third day of hospitalization without a need for additional treatment since complaints of the patients regressed, and pneumomediastinum areas regressed in control radiographs. Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Conclusion

In conclusion, SPM is a rare disease mostly seen in young men. A high level of suspicion is needed for the diagnosis, because the disease occurs without triggering factors in some patients and can be missed in radiographic imaging in about one third of the patients. Therefore, CT should be ordered in suspicious cases and to investigate the etiology. SPM should be kept in mind among differential diagnoses of chest pain especially in young male patients presenting to emergency departments.

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Informed Consent Statement: Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review in this journal.

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