

# Spontaneous Pneumomediastinum: Two Cases

## Spontan Pnömomediastinum: İki Vaka

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### ABSTRACT

Spontaneous pneumomediastinum is a benign situation which occurs rarely and frequently effects young adult men. Cases are rarely with symptoms and they are detected by chance. Frequently the symptoms degrade without need to the treatment. Diagnosis can be made by physical examination and chest roentgenograms, rarely further analysis are required. We aim at presenting two cases with spontaneous pneumomediastinum that we have diagnosed with computerized tomography.

**Keywords:** Computerized tomography; Chest pain; Emergency department; Spontaneous pneumomediastinum; Subcutaneous emphysema

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### ÖZET

Spontan pnömomediastinum nadir görülen ve sıklıkla genç erişkin erkekleri etkileyen benign bir durumdur. Olgular nadiren semptom verir ve tesadüfen saptanır. Sıklıkla tedaviye ihtiyaç duymadan semptomlar geriler. Tanı fiziki muayene ve göğüs röntgenogramlarıyla konulabilmekte, nadiren ileri incelemelere gereksinim duyulmaktadır. Bilgisayarlı tomografiyle tanı koyduğumuz, spontan pnömomediastinumlu iki olguyu sunmayı amaçladık.

**Anahtar kelimeler:** Bilgisayarlı tomografi; Göğüs ağrısı; Acil servis; Spontan pnömomediastinum; Subkutan amfizem

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## INTRODUCTION

Spontaneous pneumomediastinum which is also known as mediastinal emphysema, is described as the existence of free air within the mediastinum without any underlying triggering cause or any trauma <sup>(1,2)</sup>. Spontaneous pneumomediastinum (SPM) was first defined by Hamman in 1939. The crepitations synchronized with heart increasing in inspiration and left lateral decubite positions and heard in the apex of the heart during auscultation are called "Hamman's crunch"<sup>(1)</sup>. It frequently develops in young men without trauma due to excessive physical exercise, the increase of cough and intra abdominal pressure <sup>(3)</sup>. In addition to this, it is seen in the patients with asthma bronchiolae and drug addicts as a result of forcing excessively the esophagus due to vomiting, in Valsalva maneuver and vaginal births <sup>(4,5)</sup>. The most frequent symptoms are; chest pain, shortness of breath, hoarseness and failure to thrive <sup>(4)</sup>. Its incidence frequency is 1/12500-1/42000 within all the emergency service applications<sup>(6)</sup>. Diagnosis is frequently made through physical examination and chest roentgenograms.

## CASES

**Case-1:** Young adult at the age of nineteen came to our emergency service with a chest pain complaint increasing with gulping and spreading to the neck after the meal. He stated his complaints about hoarseness and bifurcation in his voice. The patient who had no complaints previously had no history of trauma, vomiting, coughing and drug usage.

Percutaneous emphysema was detected in dual sided supraclavicular area in the physical examination conducted in the emergency service. The respiratory sounds were bilateral and natural. Body temperature was: 36.5°C, number of breaths was: 22/minute, blood pressure was: 110/80 mmHg. There is no significant situation in his hemogram and blood biochemistry except his white blood cell's being: 14000 K/uL. His electrocardiography was in normal sinus rhythm and no pathological findings were detected. No significant feature was detected in the lung graphy and the following control lung graphies. In computerized thorax tomography (Thorax CT) free air along with the trachea in the mediastinum was detected (Figure 1). Oral intake is terminated and parenteral third generation cephalosporin, analgesic and oxygen was given. As a result of the follow-ups, his complaints degraded and he was discharged from the hospital at the 60th hour he came to the hospital. After 12 days in control thorax CT examination, emphysematous lesions were completely degraded.

**Case-2:** Young adult at the age of twenty two came to our emergency service with a chest pain increasing with respiration, back pain and hoarseness. His complaints started immediately while he was sitting. He did not have any history of trauma, drug usage, and coughing, vomiting or sportive activity. Percutaneous emphysema was detected in left cervical and supraclavicular area in the physical examination. Body temperature was: 36.5°C, number of breaths was 26/minute and blood pressure was 120/75 mmHg. No significant feature was detected in the posteroanterior chest X-ray and cervical

graphies. He was hospitalized in the thoracic surgery clinic with spontaneous pneumomediastinum diagnosis due to the free air in the mediastinum detected in Thorax CT survey (Figure 2). Oral intake was terminated and parenteral third generation cephalosporin, analgesic and oxygen was given, and as a result of the control thorax CT on the 3<sup>rd</sup> day, degrading in the pneumomediastinum and he was discharged from the hospital. In the control thorax CT conducted after 15 days, it was detected that the free air completely disappeared.

## DISCUSSION

Spontaneous pneumomediastinum is described as the existence of free air in the mediastinum without an underlying disease or triggering factor. The pathophysiology of this situation depends on the pressure gradient between alveolus and pulmonary interstium; pressure difference causes alveolar rupture and air flow to the interstium. Air in the interstium moves to the hilus and mediastinum by the pressure gradient between the lung periphery and mediastinum <sup>(5,7)</sup>. If dissection is excessive, air can move to the neck, face, arms and even to the abdomen. The reasons for coming to the hospital in patients with spontaneous pneumomediastinum may be; immediate chest pain, dyspnea, throat burning, dysphasia, dysphonia,

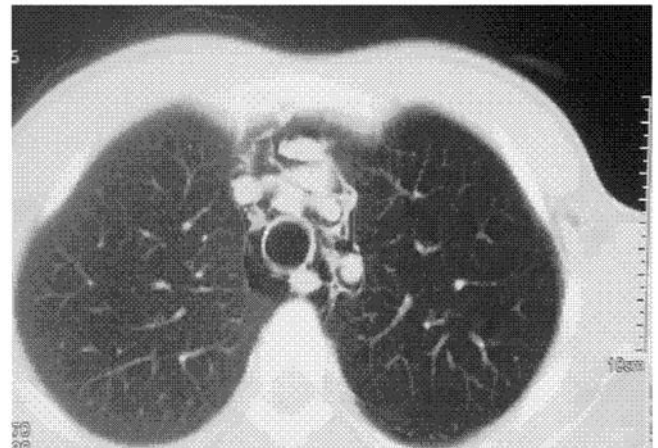


Figure 1: Free air draws attention around the trachea in mediastinum in Thorax CT



Figure 2: Free air values in mediastinum are remarkable.

palpitation, coughing, ailment and panicula at the throat<sup>(8)</sup>. Especially after heavy effort and after Valsalva maneuver, this clinical situation occurs. In addition to this; coughing, excessive vomiting, illegal drug intakes like cocaine, acute asthma crisis were reported as triggering factors<sup>(4, 5, 8)</sup>. Subcutaneous emphysema with palpation at the chest wall or neck wall can be detected in the 40-100% of the cases, sometimes Hamman's crunch can be detected<sup>(8, 9)</sup>. If there is an accompanying pneumothorax together with this situation, the respiratory sounds at that side of the lung decreases.

In spontaneous pneumomediastinum diagnosis, chest radiographies are accepted as standard approach. In Posteroanterior chest radiography along the facial plane, gas scene giving different density from the environmental tissue can be detected. Air is frequently seen as a linear line between the left mediastinum and the left end of the heart. In lateral chest radiography, in retrosternal area, air in the shape of band or line can be detected<sup>(5,9)</sup>. Yellin et al.<sup>(2)</sup> have recommended taking routinely chest radiographies of the young patients with unexplainable chest pain or dyspnea in the emergency service. Computerized Tomography can be used in cases in which posteroanterior chest radiographies are normal and suspicious, and which are considered as spontaneous pneumomediastinum. Air can be detected very easily with its localization via computerized tomography<sup>(3,9)</sup>.

Contrasted esophageal studies and flexible endoscopic studies have little risks and they are not recommended to be used as a routine diagnosis method; however they must be considered as further analysis methods. These tests should be used for diagnosis of the suspicious cases in which there is fever, perspiration or leukocyte especially developed due to coughing, illegal drug intake or sportive activity<sup>(4)</sup>. Esophagus passage graphies or endoscopic examination was not conducted because esophagus rupture is not considered in our cases clinically. Spontaneous pneumomediastinum does not require any specific treatment. Clinical follow-up, bed rest, analgesic and oxygen therapy and prophylactic antibiotic intake in order to prevent the development of mediastinitis in patients are recommended<sup>(9, 10)</sup>. The patient whose symptoms degrade and proceed in stability can be discharged from the hospital. Monitoring period is between 24-36 hours; however can be extended depending on the clinical situation. One of our cases was monitored in emergency service and the other one in thoracic surgery clinic approximately for 3 days. In order to prevent the mediastinitis, prophylactic 3rd generation cephalosporin group antibiotic and analgesic were applied parenterally for 3 days. Oxygen was given. Percutaneous and mediastinal emphysema was observed to degrade rapidly in the clinical surveys conducted on the patients. Patients were fed orally at the 3rd day and discharged from the hospital. The complaints and mediastinal emphysema detected to be disappeared completely after the controls made at the 12th and 15th days.

As a result, spontaneous pneumomediastinum is a very benign clinical situation rarely develops but especially diagnosed in young adults. Rare prevalence together with nonspecific symptoms may give rise to delays in diagnosis and wrong

diagnosis. In case of unexplainable chest pain, dyspnea in young adults, spontaneous pneumomediastinum must be considered. We want to remind this clinical situation by presenting the clinical follow-up and treatment of patients with spontaneous pneumomediastinum followed up in our clinic.

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