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Case report

Spontaneous pneumomediastinum. Case report

Spontan psödomediastinum. Olgu sunumu

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ABSTRACT

Pneumomediastinum is defined by the presence of air in the mediastinum. Here we describe a patient with spontaneous pneumomediastinum and extensive subcutaneous emphysema.

An 18-year-old woman presented to the emergency department complaining of cough and neck pain. Cervical inspection revealed enlargement of the anterior region and crepitation was heard on palpation of that region and supraclavicular fossa. Performed chest CT confirmed the existence of pneumomediastinum with further dissection of air into the neck.

Pneumomediastinum is a rare and generally benign condition.

Keywords: Emergency, pneumomediastinum, treatment.

ÖZET

Pnömomediasten mediastende havanın varlığı olarak tanımlanır. Burada, spontan psödomediasten ve ciltaltında yaygın anfizem saptanan bir hasta sunulmuştur.

Onsekiz yaşındaki bayan hasta öksürük ve boyun ağrısı şikayetleri ile acil servise müracat etti. Muayenede boyun ve göğüs ön kısmında genişleme ve palpasyonla supraklaviküler bölgede krepitasyon varlığı ortaya kondu. Çekilen toraks bilgisayarlı tomografisinde pnömomediasten ve boyuna doğru ilerleyen havanın varlığı saptandı.

Pnömomediasten nadir görülen ve genellikle benign karakterli bir durumdur.

Anahtar kelimeler: Acil, pnömomediasten, tedavi.

INTRODUCTION

Pneumomediastinum is defined by the presence of air in the mediastinum and first described by Laennec in 1819 (1,2). It may be spontaneous or secondary. The main causes of pneumomediastinum are trauma, invasive procedures (cervical, thoracic, or abdominal), tracheobronchial or esophago-bronchial fistulas, Valsalva maneuver, positive-pressure ventilation, coughing, vomiting, physical exertion, asthma exacerbation, defecation, physical exercise, labor, upper airway infection, neonate respiratory distress syndrome and inhaled drug use (1,2). Spontaneous pneumomediastinum (SPM) is an uncommon and benign clinical disorder which usually occurs in young adult males (3). Spontaneous pneumomediastinum, which is also called Hamman's syndrome was first described by Louis Hamman in 1939 (4).

Pathophysiology is based on effective alveolar rupture due to an increase in intrathoracic pressure, followed by air dissection through the bronchovascular sheath into the mediastinum. Air can also dissect through other serious structures and subcutaneous tissue (2). A classical clinical triad has been described as chest pain (usually retrosternal and pleuritic in nature), subcutaneous emphysema and dyspnea. Other symptoms include coughing, fever, dysphonia, odynophagia, dysphagia and cervical pain (1,2). The Hamman sign is pathognomonic and characterized by systolic crackles which is described as rubbing balloons in the left sternal border, best heard in left lateral decubitus position (2). The diagnosis is based

on imaging techniques and clinical symptoms. The standard radiography diagnostic procedure is chest x-ray; showing a double line outlining the mediastinum (1,2). Diagnosis can be confirmed by chest CT when not apparent on radiography. Once confirmed the diagnosis, patient should be admitted for monitoring and treatment: avoidance of the trigger factors, oxygen and bed rest. A chest tube is recommended in case of pneumothorax and/or hypertensive pneumomediastinum (1).

Here we describe a patient with spontaneous pneumomediastinum and extensive subcutaneous emphysema.

CASE

An 18 year old woman presented to the emergency department complaining of cough and pain of the neck. There was no history of trauma, although she reported taking a drug for headache. There was no COPD and asthma in the patient's medical history.

On admission she had no fever, had normal hemodynamic parameters and showed signs of respiratory distress. Cervical inspection revealed enlargement of the anterior region and crepitation was heard on palpation of that region and supraclavicular fossa. Cardiac and lung sounds were normal. Abdominal examination of patient was normal. Labratory tests (complete blood count, renal function tests and electrolytes) and arterial blood gases were unremarkable. A postero-anterior chest X-ray (Figure 1) showed a slight line of air surrounding the cardiac silhouette. A lateral cervical x-ray showed a line of air in front of C5-6 vertebrae (Figure 2). Chest CT was performed (Figure 3), revealing the existence of pneumomediastinum with further dissection of air into the neck; there was no signs of pneumothorax, parenchymal and/or pleural abnormalities. The patient was hospitalized and treated by inhaled bronchodilators, analgesics, and maintained on the previously prescribed antibiotics.

After clinical and radiological improvement; the patient was discharged on the 2th day of hospitalization and referred to the thoracic surgery department for control examinations. During this follow-up period there were no signs of recurrence.

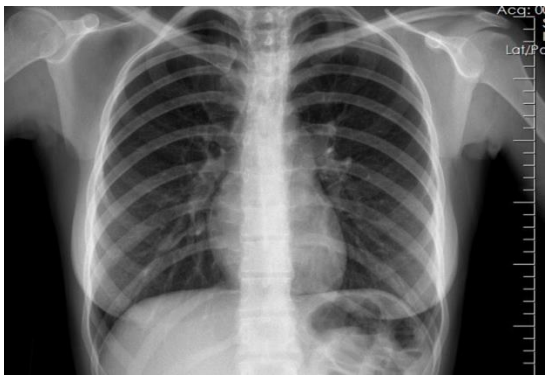

Figure 1: A slight layer of air surrounding the cardiac silhouette in A postero-anterior chest X-ray.

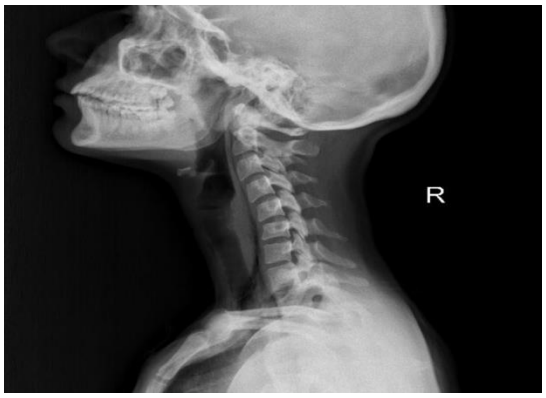

Figure 2: Air in the cervical X-ray

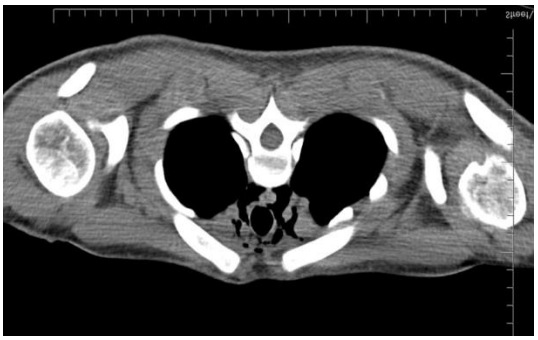

Figure 3: Existence of pneumomediastinum with further dissection of air into the neck in the CT

DISCUSSION

Spontaneous pneumomediastinum or spontaneous mediastinal emphysema was officially described for the first time by Louis Hamman in 1939 (4). The physiopathological aspects involved in SPM were initially described by Macklin in 1944. He considered that the underlying factor was the rupture of terminal alveoli secondary to increased alveolar pressure, with consequent leakage of air into the peribronchial interstitial space and, from there, to the hilum and mediastinum. The air in the mediastinum can cross through the fascia and spread to the subcutaneous tissue of the chest and cervical regions, retropharyngeal space, peritoneum, retroperitoneum, and pericardium (1). Several pulmonary diseases are associated with spontaneous pneumothorax, including asthma, chronic bronchitis, emphysema, bronchiectasis, pneumonia, abscess, diabetic ketoacidosis, force exercise, narcotic substance use, barotrauma, hyperbaric therapy, primary or metastatic cancer, and chronic interstitial lung disease (5,6). Although pneumomediastinum often presents with frightening symptoms (subcutaneous emphysema, dyspnea and chest pain) it is usually benign, requiring reassurance and simple therapeutic measures as oxygen and analgesics and has a good outcome. Patients should be monitored for complications, which are rare (2).

This case shares many aspects with most cases reported in the literature, particularly regarding the form of presentation, therapeutic approach and

clinical evolution. Chest pain, although nonspecific, is the most frequently involved symptom and when associated with dyspnea, it is present in approximately 82% of cases (1).

Spontaneous pneumomediastinum primarily affects young adult males, as evidenced by the fact that more than 75% of reported cases consist of males with a mean age of 20 years (4). This case was an 18 year old and female in accordance with the literature.

Regarding the diagnostic investigation, chest X-ray is the method of choice; however, the postero-anterior view establishes the diagnosis in only half of the cases, making it important to obtain a profile view, allowing for the diagnosis in approximately 100% of cases. A lateral view is necessary because studies have found that up to 50% of all cases may remain undiagnosed if only a postero-anterior radiography is taken. The chest CT scan is considered the gold standard of imaging tests, capable of detecting pneumomediastinum even in patients with small amounts of mediastinal air and allows clarification of situations in which the chest X-ray is not conclusive. It also allows for the assessment of the extent of disseminated air and to rule out other associated lesions (1,4).

Therapy consists of rest and symptomatic relief with analgesics, bronchodilators, and oxygen therapy if there is respiratory failure. Most cases have a favorable clinical course, with complete passive reabsorption of air (1).

Complications rarely occur, and include pneumothorax/hypertensive pneumomediastinum, which may justify surgical procedures. The risk of recurrence is low and, to date, only one case has been reported (1). Recurrent pneumomediastinum is rare and generally occurs when exposure to the trigger continues status (2). In the case described, the patient is being followed at the thoracic surgery department, with no recurrence.

In conclusion, pneumomediastinum is a rare and generally benign condition. It must be emphasized that, despite the nonspecific nature of symptoms often associated with SPM and must be remembered that the diagnosis is by exclusion and that it is essential to rule out other underlying causes through a detailed clinical history and complementary examinations appropriate to the patient's clinical context.

REFERENCES

1. Monteiro FH, Semedo A, Silva RS, Pereira S, Alfaiate T, Costa T, et al. Spontaneous pneumomediastinum: case report. Revista da Associaçao Medica Brasileira 2012;58(3):355-7.
2. Meireles J, Neves S, Castro A, França M. Spontaneous pneumomediastinum revisited. Respiratory Medicine CME 2011;4:181e183.
3. Koullias GJ, Korkolis DP, Wang WJ, Graeme L. Hammond. Current assessment and management of spontaneous pneumomediastinum: experience in 24 adult patients. European J Cardiothoracic Surgery 2004; 25:852-5.
4. Macia I, Moya J, Ramos R, Morera R, Escobar I, Saumench J, et al. Spontaneous pneumomediastinum: 41 cases. European J Cardiothoracic Surgery 2007;31:1110-4.
5. Bradley JD. Spontaneous pneumomediastinum in adult dermatomyositis. Annals Rheum Dis 1986;45:780-782.
6. Durukan P, Tekin I, Yakar S, Salt O, Baykan N, Ozkan S. Spontaneous pneumomediastinum: Case report. GMJ 2017; 28: 275-7.