

CASE REPORT

Spontaneous Mediastinal Emphysema Associated with the Use of Synthetic Cannabinoid (Bonsai)

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Abstract

Spontaneous Mediastinal Emphysema (SME), which is a rarely seen case is defined as the detection of free air in the mediastinum without any trauma. Although rare, some cases secondary to drug use have been reported. In this study, two SME cases that developed due to the use of a synthetic cannabinoid known as “bonsai”, which has recently become widespread in Turkey, are presented. We would like to emphasize that SME should also be considered in the differential diagnosis of patients who present with the symptoms of chest pain and dyspnea and have a history of drug use.

KEY WORDS: Mediastinal emphysema, drug use, synthetic cannabinoid

Received: 11.11.2014

Accepted: 17.01.2015

Available Online Date: 20.11.2015

INTRODUCTION

Spontaneous Mediastinal Emphysema, (SME) is defined as the presence of nontraumatic free air in the mediastinum. Spontaneous mediastinal emphysema may rarely develop secondary to drug use [1].

Patients frequently come to the emergency unit with complaints of dyspnea, chest pain, and findings of neck swelling, and respiratory insufficiency [1].

The drug known as bonsai, the use of which has become widespread among the youth in Turkey, is a synthetic cannabinoid [2]. We came across two cases in our clinic in the 2- month period between August and September 2014, possibly as an indication of a “bonsai epidemic”.

CASE PRESENTATION

Both patients were admitted to the emergency unit with dyspnea and chest pain. In addition, there was hemoptysis in one of the patients. Moreover, they had complaint of cough for a few days. The ages of the patients were 19 and 30 years and both were male. They were hospitalized after obtaining their written and verbal informed consents. In their histories, it was learned that they used bonsai a few times in the last week, and they had not used any other drugs apart from bonsai.

On physical examination of the patients, subcutaneous emphysema was observed and crepitus was felt in the neck region. The chest radiographs of both patients were normal, their ECG's revealed normal sinus rhythm and D-dimer values were within normal limits. SME was diagnosed by thoracic computed tomography (CT) , after which a thoracic surgeon was consulted, and a decision to treat the patients without surgical intervention was made (Figure 1-4). The patients received nasal oxygen (2 l/min) and bronchodilator support.

The patients had normal vital findings, arterial blood gases, and chest radiographs. They underwent bronchoscopy to investigate possible endobronchial pathologies; however; both bronchoscopies revealed no endobronchial involvement. The patients showed full recovery and were discharged following 7 days of conservative treatment. They were referred to the Alcohol and Substance Addiction Treatment and Research Center (AMATEM) for treatment of addiction and they are still under follow-up as outpatients.

DISCUSSION

SME is the detection of free air in the mediastinum without a history of trauma. It has been reported that SME develops as a result of severe cough (i.e. a cough during an asthma attack), after overexertion or Valsalva maneuver. Air leaks through “visceral space”, the trachea, the esophagus, or major vessels in the neck surrounding mediastinal structures, and passes through the diaphragm and joins the retroperitoneal space. Air can reach up to the mediastinum because



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Figure 1. PA chest X-ray: Case 1.

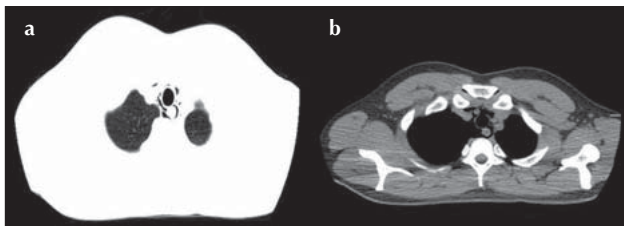


Figure 2. a, b Mediastinal emphysema and subcutaneous emphysema in thoracic CT of case 1.



Figure 3. PA chest X-ray: Case 2.

of pathologies such as alveolar rupture and infection-related gas formation, with loss of structural unity, and it causes mediastinal emphysema. SME might develop among drug users due to overexertion. Drug use-related SME is known as a rare condition [1]. Drugs reported to date include ecstasy (3,4-methylenedioxy-methamphetamine and cocaine [3,4].

Drug use is rapidly becoming more widespread in Turkey as well as globally [2]. Drug users mostly present with the symptoms of neurological or cardiovascular systems; less frequently seen are dyspnea, hemoptysis, and chest pain [1].

Cases with diffuse infiltrates, nodular formations, or icy glass appearance in the lungs due to the use of bonsai and similar

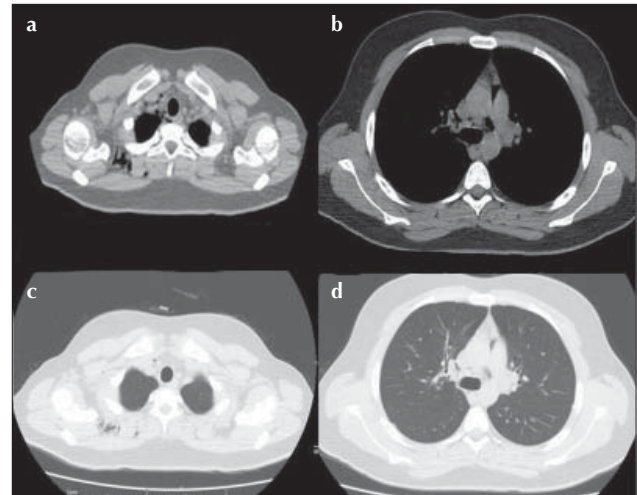


Figure 4. a-d. Mediastinal emphysema and subcutaneous emphysema in thoracic CT of case 2.

synthetic cannabinoids have begun to appear in the medical literature [5]. SME with subcutaneous emphysema has also been reported [1].

In SME, chest pain and dyspnea are prominent, though cough and hemoptysis may also be seen. Subcutaneous emphysema is often detected [1]. Generally, SME follows a benign course, but in the presence of predisposing factors, such as asthma, or if massive, it can lead to respiratory failure or may even be fatal [5]. It is frequently seen in young men [5,6].

On physical examination, auscultation reveals normal findings. In the presence of subcutaneous emphysema, crepitus is felt with palpation around the neck region [1]. Subcutaneous emphysema may not be detected in chest radiography. However, in the lower paratracheal and paracardiac areas, radiolucent areas can be detected [1]. In patients with a history of drug use, even if chest X-rays are normal, the presence of chest pain and dyspnea necessitates thoracic CT to rule out possible SME. On thoracic CT, air is observed in the mediastinum and subcutaneous region [1].

SME can usually be treated conservatively, but may also result in acute respiratory failure and sudden death. Monitoring patients in an intensive care unit can reduce mortality and morbidity [5,6]. The pathological findings and pathophysiology of the disease have not yet been completely determined because of the low number of cases with reported autopsy findings.

The differential diagnosis of SME includes diseases with high mortality, such as myocardial infarction, pulmonary embolism, tracheal and bronchial rupture, endobronchial tuberculosis, past radiation therapy, bronchoesophageal fistula, and particularly esophageal perforation [1]. After ruling out pulmonary embolism and acute myocardial infarction, bronchoscopy should be performed in order to eliminate possible endobronchial pathologies [7]. Moreover, gastroscopy/endoscopy may also be needed [7].

Medical treatment consists of supplemental oxygen, bronchodilators, and antibiotics, if necessary [1,5,6]. Decisions

regarding mediastinotomy for decompression should be made together with a thoracic surgeon [8].

In young male patients presenting with chest pain, dyspnea and hemoptysis, especially with a history or a suspicion of drug abuse, mediastinal emphysema should also be considered in the differential diagnosis.

Informed Consent: Written informed consent was obtained from patients who participated in this case.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - E.Ç., E.G.U.C.; Design - E.G.U.C., S.İ.; Supervision - E.Ç.; Funding - S.Ö., M.N., S.İ.; Materials - M.N., S.Ö.; Data Collection and/or Processing - M.N., S.Ö.; Analysis and/or Interpretation - E.G.U.C.; Literature Review - E.G.U.C.; Writer - E.G.U.C.; Critical Review - E.Ç.; Other - S.İ.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

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