Case Report

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Do Not Try at Home Alone; Spontaneous Pneumomediastinum Due to Handstand

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Abstract

Spontaneous pneumomediastinum (SP) is the accumulation of air in the mediastinum without a surgical or traumatic etiology. It is thought that the basic mechanism triggering SP is the pressure difference that develops after a strong Valsalva maneuver. We presented a 50-year-old male patient was admitted to the emergency department with sudden onset chest and epigastric pain that started after standing up for a handstand. He had atrial fibrillation with rapid ventricular response with a hearth rate of 285 beat/min. Heart rate control was achieved after medical treatment. His computerised tomography was consistent with air in mediastinum. First line treatment was started and the patient was transferred to the thoracic surgery ward. Spontaneous pneumomediastinum is one of the rare diagnoses that should be considered in patients presenting with chest pain and shortness of breath. It is important to correctly evaluate what may be associated with the valsalva maneuver among the sportive movements performed at home, and to keep in mind that SP can also occur in different age groups in order to make the correct diagnosis.

Keywords: Spontaneous pneumomediastinum, pneumomediastinum, valsalva maneuver

Introduction

Spontaneous pneumomediastinum (SP) is the accumulation of air in the mediastinum without a surgical or traumatic etiology (1). Spontaneous pneumomediastinum is a clinical condition that was first described by Louis Hamman in 1939. (2). The main factor in the formation mechanism of SP is the sudden increase of pressure in the intrathoracic cavity (3). As a result, increased intraalveolar pressure causes alveolar rupture and then air leak into the lung interstitium and tracheobronchial tree. It is thought that the basic mechanism triggering SP is the pressure difference that develops after a strong Valsalva maneuver.

Spontaneous pneumomediastinum usually presents with symptoms such as chest pain, neck pain, shortness of breath, and difficulty in swallowing. It is a benign and self-limiting clinical condition. SP is usually seen in the young patient population around 25 years of age (4). Diagnosis process begins with symptoms and physical signs and ends with radiological confirmation of air in the mediastinum (5). The prognosis of patients is generally good and bed rest, oxygen and analgesics are often sufficient for the treatment of patients with SP.

In this case report, we aimed to present a relatively older SP patient with an atypical presentation.

Case Report

A 50-year-old male patient was admitted to the emergency department with sudden onset chest and epigastric pain that started after standing up for a handstand. The patient was diagnosed as atrial fibrillation 20 years ago, but was treated successfully. There is no regular medication usage in his history. In physical examination general condition was fair, he did not have respiratory distress but with a blood pressure of 80/60 mmHg, a heart rate could not be detected and a fever of 36,5°C. Electrocardiogram (ECG) was consistent with atrial fibrillation with rapid ventricular response (A-fib with RVR) with a hearth rate of 285 beat/min (Figure 1). Heart rate control was achieved after rapid intravenous bolus injection of 5 mg of metoprolol (Figure 2). In laboratory examination hemoglobin was 11,4 g/dl, blood ure nitrogen

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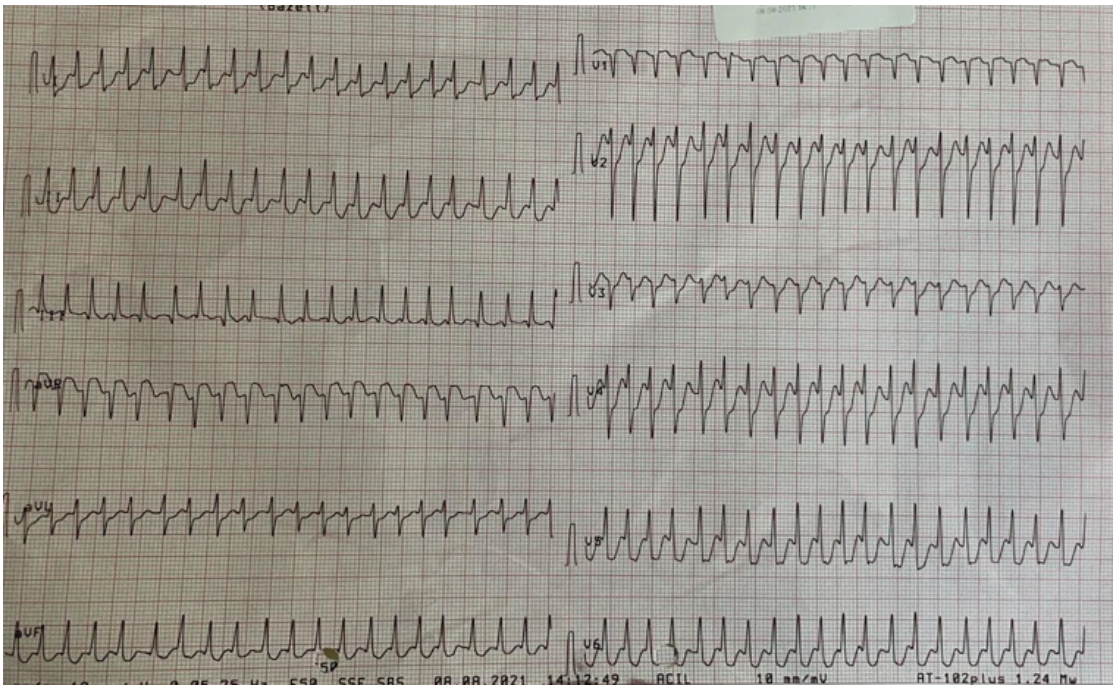

Figure 1. Electrocardiogram of the patient was consistent with atrial fibrillation with rapid ventricular response.

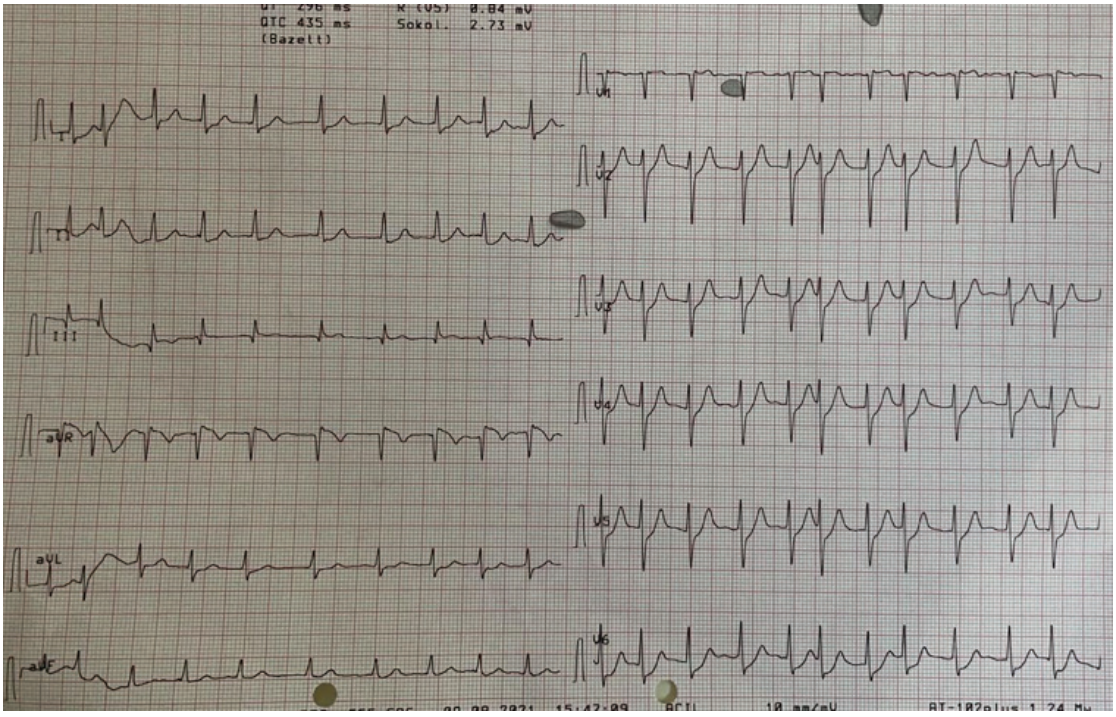

Figure 2. Electrocardiogram of the patient after heart rate control was achieved.

38 mg/dL, creatinine 1.2 mg/dL, sodium 128 mmol/L, potassium 4,3 mmol/L and Troponin I 0.06 ng/m. Contrast-enhanced thorax computerised tomography angiography was planned in the patient's emergency department follow-up to investigate the causes of ongoing chest pain and sudden on-set shortness of breath. Computerised tomography with intravenous contrast was consistent with air in mediastinum (Figure 3). Analgesic medication and oxygen treatment was started in the emergency department and the patient was transferred to the thoracic surgery ward. Acute coronary syndrome was excluded by bedside echocardiography before the patient was transferred to the thoracic surgery ward. The patient did not undergo any surgical intervention and was given oxygen treatment and analgesic medication

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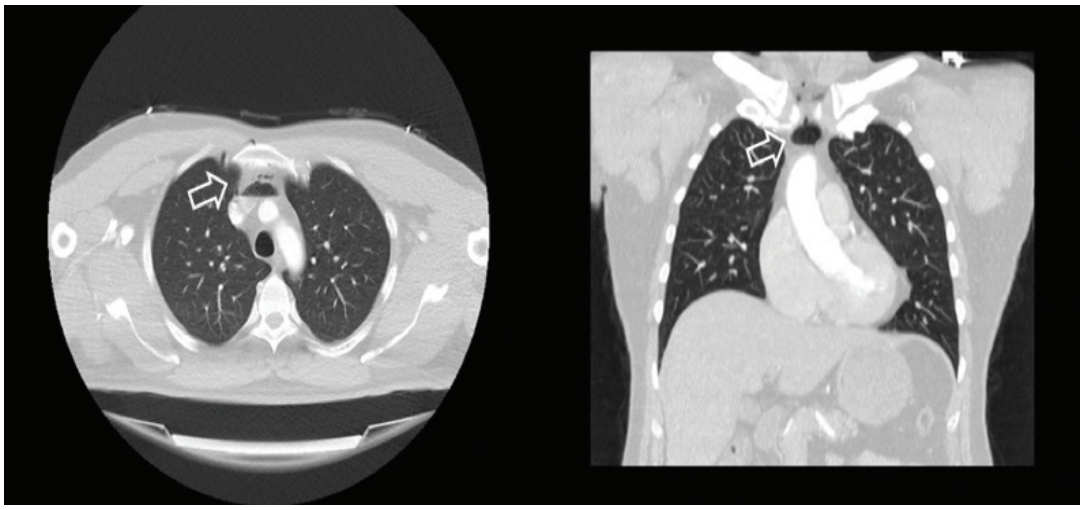

Figure 3. Axial and coronal computerised tomography sections of patient (white arrows show the free air in mediastinum).

in the thoracic surgical ward where he was admitted. The patient was discharged after 7 days.

Discussion

Spontaneous pneumomediastinum is a very rare clinical condition with a prevalence of 0.01%. Conditions that increase intrathoracic pressure come first in SP etiology. Our case described here stated that his complaints started after doing a handstand when he was at home. A case who presented with a similar mechanism has not been described in the literature. Only Lee reported a case of SP developing after running in army trainee (6).

In the literature, it was stated that SP is generally seen in young male patients (7). Considering the age of our patient, it was considerably higher than the classical average age of SP cases.

SP most commonly presents with chest pain and shortness of breath (8). Most cases of SP are related to conditions that result in vigorous Valsalva maneuvers such as strenuous physical activities, coughing, vomiting. Our patient's complaints were consistent with the literature. However, the handstand activity that triggered the strong valsalva causing SP was a rare situation that differed from the literature.

Vital signs of patients with SP are generally stable at the time of admission. Only in malignant pneumomediastinum, which is a rare condition, instability findings due to compression and obstruction on the trachea, esophagus and other mediastinal organs can be detected with excessive air accumulation in the mediastinum (9). Although there was no massive air accumulation in the mediastinum in our patient, his vital status at the time of admission was unstable. However, we think that this situation is related to A-fib with RVR, which responded quickly to medical treatment.

Conclusion

Spontaneous pneumomediastinum is one of the rare diagnoses that should be considered in patients presenting with chest pain and shortness of breath. It is important to correctly evaluate what may be associated with the valsalva maneuver among the sportive movements performed at home, and to keep in mind that SP can also occur in different age groups in order to make the correct diagnosis.

Conflict of interest statement
None of the authors have any conflict to disclose.

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Statement on informed consent
The case report has written in an anonymous characteristic, thus secret and detailed data about the patient has removed. Editor and reviewers can know and see these detailed data. These data are backed up by editor and by reviewers.

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