CASE REPORTS

Simultaneous Spontaneous Bilateral Pneumothoraces in an Asthmatic

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ABSTRACT

The occurrence of simultaneous spontaneous bilateral pneumothoraces is a very rare event. We present a case of a 14-year old asthmatic female patient who presented to the emergency room for routine treatment. While receiving nebulizations, she suddenly developed supraclavicular fullness with crepitus. Further examination revealed a clinical diagnosis of bilateral pneumothoraces. Although this phenomenon is more commonly associated with patients on mechanical ventilation, this case illustrates that physicians must be cognizant of this unique presentation in order to initiate early and aggressive life-saving therapy. With rapid bilateral needle thoracocentesis followed by placement of bilateral thoracostomy tubes, the patient recovered well. In this report, we also attempt to briefly review the possible pathophysiology of this form of spontaneous pneumothorax.

Neumotórax Espontáneos Bilaterales Simultáneos en un Asmático

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RESUMEN

La incidencia del neumotórax espontáneo bilateral simultáneo en un asmático es un acontecimiento raro. Presentamos un caso de una paciente asmática hembra de 14 años de edad, quien acudió a la sala de emergencia para tratamiento de rutina. Mientras recibía nebulizaciones, desarrolló súbitamente plenitud supraclavicular con crépito. El examen posterior reveló un diagnóstico clínico de pneumotórax bilateral. Aunque este fenómeno se halla más comúnmente asociado con pacientes en ventilación mecánica, este caso ilustra que los médicos tienen que tener conciencia de esta presentación única para iniciar una terapia agresiva y temprana que haga posible la salvación del paciente. Con una rápida toracocentesis bilateral mediante aguja, seguida de colocaciones de tubos de toracostomía bilateral, la paciente se recuperó bien. En este reporte también intentamos realizar una breve revisión de la posible patofisiología de esta forma de neumotórax espontáneo.

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INTRODUCTION

Acute presentation of spontaneous pneumothorax may be life-threatening. The need for vigilance and early recognition is crucial. A case of simultaneous spontaneous bilateral pneumothorax (SSBP) is presented. We believe this to be a rare case in the literature in an unventilated asthmatic patient. Although the exact aetiology of the bilaterality of this case of spontaneous pneumothorax was not identified, the case demonstrates an unusual emergency presentation of a rare entity which required early identification and appropriate treatment.

CASE REPORT

A 14-year old asthmatic female presented to the Accident and Emergency Department of the University Hospital of West Indies, Kingston, Jamaica, with a one day history of acute dyspnoea. Besides bronchial asthma, there was no history or stigmata of any other underlying pulmonary disease and no evidence of AIDS. She denied ever smoking. She had no history to suggest any clinical features of cystic fibrosis.

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On initial examination, her respiratory rate was 20 breaths per minute, her pulse was 108 beats per minute and blood pressure 120/60 mmHg. She had an oxygen saturation on room air of 98%. Chest examination showed central trachea with scattered wheezing bilaterally. The patient received nebulizations with a combination of salbutamol and ipatropium bromide with an initial dose of oral prednisone. While receiving treatment, she suddenly deteriorated, becoming more severely dyspnoeic. The trachea remained central and cardiac output at this time was not impaired. Of note, she had rapidly developed marked subcutaneous emphysema in both supraclavicular regions and decreased air entry in both lung fields. Intravenous access was secured and a portable chest radiograph obtained. Immediate arterial blood gases on room air revealed pH 7.33, PO_2 55 mmHg and PCO_2 23 mmHg. The patient's respiratory distress and subcutaneous emphysema progressively worsened and was then associated with severe chest pain. A clinical diagnosis of simultaneous spontaneous bilateral pneumothoraces (SSBP) was made and bilateral needle thoracocenteses in the second intercostal spaces were performed. Her respiratory parameters improved dramatically. At this point, the chest radiograph was made available and revealed air in the supraclavicular areas but no other abnormalities (Fig. 1). Bilateral

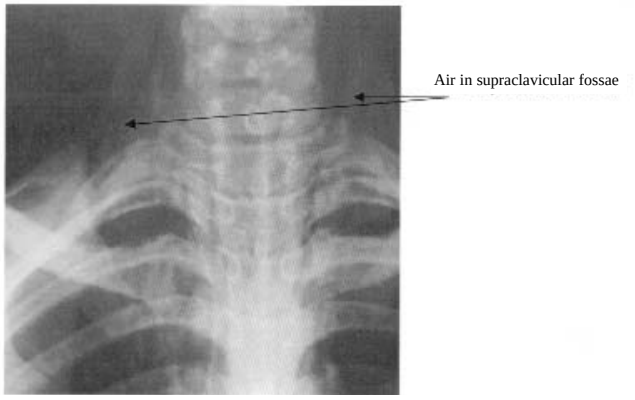

Figure: Chest radiograph demonstrating air in supraclavicular fossae.

thoracostomy tubes were inserted. During the procedure, the patient became combative. Her repeated blood gases revealed a pH of 6.98, PCO_2 of 67 mmHg, and PO_2 of 255 mmHg. Based on her CO_2 narcosis, she was intubated and was admitted to the Intensive Care Unit (ICU) for ventilatory support. The patient was extubated one day post admission and both chest tubes were removed on day two. She was discharged five days post admission in a comfortable condition. She had no recurrence on follow-up over the next six months after which she defaulted clinic visits.

DISCUSSION

Acute presentation of spontaneous pneumothorax may be life-threatening. This entity may present in various clinical forms. Recently, we reported a case of spontaneous tension haemo-pneumothorax which required urgent thoracotomy (1). The incidence of primary spontaneous pneumothorax is estimated to be approximately 100 000 per year for men and approximately 1.2–6 per 100 000 per women (2).

Simultaneous spontaneous bilateral pneumothoraces, the presentation of separate right and left pneumothorax, represents another form of this entity and is a rare event. This occurs up to 1.9% of cases of spontaneous pneumothorax (3). In humans, the right and left pleural spaces are completely separated without evidence of preformed anatomic communications (4). Previous reports of pleuro-pleural communication resulting in SSBP have been associated following major invasive thoracic procedures, specifically mediastinal surgery (2, 4). Schorlemmar *et al* have referred to this condition as the "buffalo chest" (5) based on the observation that the buffalo or bison is one of the few mammals to have a single pleural cavity. This proved to be a disadvantage for the buffalo as a single arrow strike into the animal's chest would likely cause both lungs to collapse, rendering the animal incapacitated. The first report of this entity (buffalo chest) due to pleuro-pleural communication in the absence of major thoracic surgery was recently done by Hartin (6).

We believe the index case is a rare presentation of a BSPT in an unventilated asthmatic. Previously, Hostetler reported a similar disease pattern in another asthmatic patient (7). Our case demonstrated an unusual emergency presentation of a complication of an asthmatic attack. A possible mechanism for this presentation involves severe expiratory obstruction with air trapping leading to simultaneous or near-simultaneous rupture of bilateral apical subpleural bullae with subsequent development of bilateral pneumothoraces. An alternative scenario could involve the rupture of a large mediastinal subpleural bulla on one side leading to a "tension mediastinum" with burrowing of the pressurized air into the upper mediastinal and cervical tissues and rupture into the opposite pleural space, resulting in a *de-facto* "buffalo chest". Lastly, it is possible that the patient had a pre-existing anatomical single pleural cavity (6). The deterioration in her ventilation during insertion of the chest tubes could be attributed to over-distended alveoli and air trapping due to the sudden development of the bilateral pneumothoraces. The possibility of bilateral localized tension pneumothoraces have also been reported (7). However, this would have been difficult to diagnose because of the lack of asymmetry in the physical findings.

Bilateral spontaneous pneumothoraces is rare and may be secondary to chronic diseases such as asthma or COPD, as it may have been in this case. Furthermore, the entity of spontaneous pneumothorax is also commonly associated with cystic fibrosis. In fact, Flume in his review reported that this presentation is commonly reported in patients with cystic fibrosis (8). There was no family history or any systemic symptoms and signs in the history and presentation of the index case to suggest cystic fibrosis.

It is not possible to be exactly sure which scenario actually occurred. However, it is important to be aware that bilateral spontaneous pneumothoraces can occur, by whatever mechanism.

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