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Case Report

Buffalo chest in a not so high fall: a case report

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ABSTRACT

Bufallo chest refers to an anatomical variation characterized by an ongoing connection between the two pleural spaces, a unique feature found in these animals, since they possess a single pleural space due to an incomplete mediastinum. When this condition is found in humans, a unilateral chest trauma can cause bilateral pneumothorax. We reported a case of a 91 year old male who, after a fall resulting in right ribs fractures, presented at the emergency department with an extensive bilateral pneumothorax. We described clinical and imagiological features and our approach. This case demonstrates an unusual presentation of a rare anatomical anomaly.

Keywords: Buffalo chest, Bilateral pneumothorax, Chest trauma

INTRODUCTION

A buffalo chest, which refers to buffalo pneumothorax, represents an under-reported and rare complication characterized by the rare simultaneous occurrence of bilateral pneumothorax.[1] Pneumothorax, the accumulation of air in the pleural space, is a well-known pulmonary emergency often associated with sudden chest pain, dyspnea, and respiratory distress.[2]

The manifestation termed buffalo pneumothorax arises due to an atypical physical communication between the two pleural spaces, on the basis that the buffalo or bison are one of the few mammals that has a single pleural cavity.[2-4] The theory posits that this pleuro-pleural communication occurs in the front mid-chest region, where the typical anatomical separation of the two pleural spaces along the anterior junctional line is compromised.[3]

This occurrence is associated mostly with previous intrathoracic surgery (as in esophagectomies, pneumonectomies or heart-lung transplantations), transthoracic lung biopsy, pacemaker placement, mechanical ventilation, tracheostomy, lung disease, or chest trauma.[2,5]

Current report demonstrates a rare case of bilateral pneumothorax in a 91 year old male who presented to the emergency department after a fall, describing his symptoms, image findings and approach.

CASE REPORT

A 91 year old male patient sought the Emergency Department due to a fall from standing height with impact to the sacrococcygeal region, experiencing pain in the lower back, without other complaints.

On primary survey, he exhibited tenderness upon palpation of the spinous processes in the lumbar region, with no observable deficits. A computed tomography scan of the lumbar and dorsal spine was performed, which did not reveal any abnormalities, and he was discharged with symptomatic medication.

Three days after, he returned to the Emergency Department with marked periorbital edema, denying shortness of breath, cough, or other symptoms. He had never undergone any thoracic surgery and denied chest trauma at the time of the fall three days before.

Objectively, he was hemodynamically stable, with reasonable peripheral oxygen saturations; he had marked bilateral periorbital edema, as well as in the rest of the face and cervical region. Palpation revealed subcutaneous emphysema of the thoracic and abdominal walls and upper limbs (Figure 1). There were no changes in lung auscultation. A thoraco-abdomino-pelvic computed tomography (CT) scan was performed (Figure 2), which revealed fractures of the 9th and 10th right ribs with displacement of the bony ends associated with bilateral pneumothorax, larger on the left, with lung atelectasis, as well as extensive emphysema in the bilateral thoracic wall, extending to the cervical region, shoulders, mediastinum, abdominal wall, bilateral inguinoscrotal region, and right retroperitoneum.

One chest drain was placed in each hemithorax (18 Fr left, 16 Fr right) in the fifth intercostal space. A chest CT was performed one day after admission, which showed good evolution of both pneumothoraces (Figure 4). The patient was then hospitalized and eventually died from respiratory superinfection.

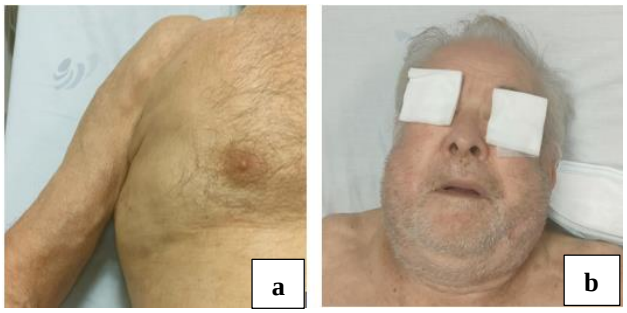

Figure 1: Patient at admission exhibiting an extensive subcutaneous emphysema of the thoracic and abdominal walls, (a) upper limbs; and (b) cervical region and shoulders.

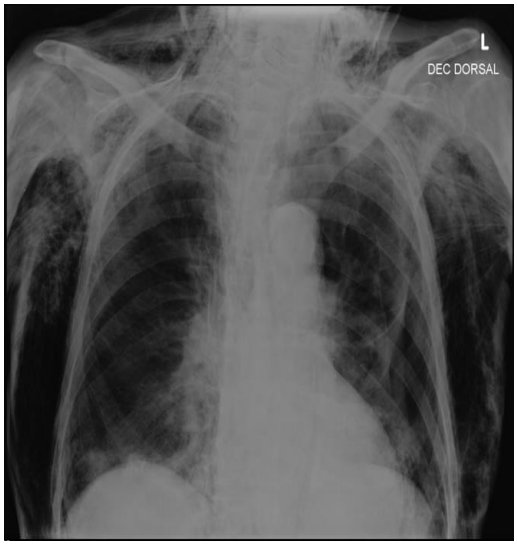

Figure 2: Chest radiograph at admission exhibiting bilateral pneumothorax and subcutaneous emphysema of the thoracic wall.

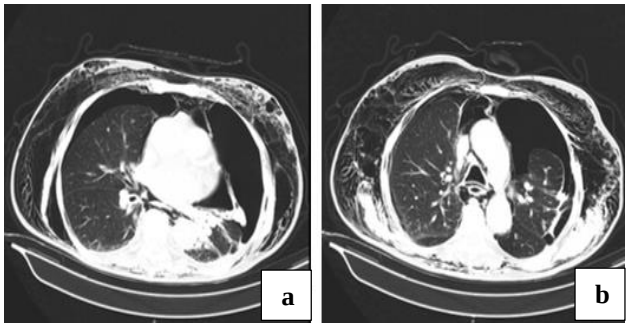

Figure 3: Chest TC at admission showing bilateral pneumothorax with collapse of the left lung.

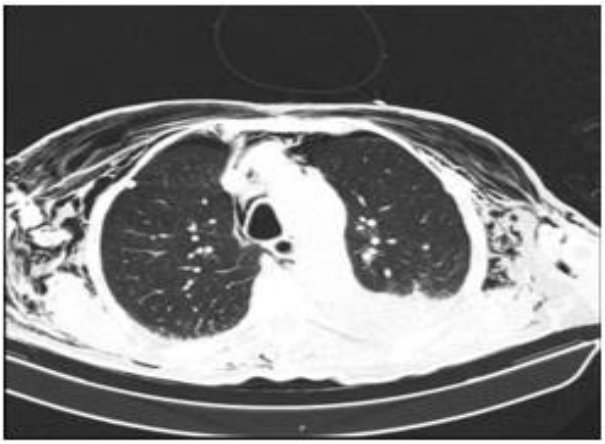

Figure 4: Chest TC after placement of chest tubes showing significant improvement of bilateral pneumothorax.

DISCUSSION

Patients with buffalo chest often present with bilateral pneumothorax following a unilateral procedure or insult. Buffalo chest is a rare diagnosis but must be on a differential list of bilateral chest pathology as this may result in fatal consequences.

The diagnosis of buffalo chest in this case was made on the bilateral pneumothorax after only one-sided fractured ribs. It should be noticed that the conventional method for handling tension pneumothorax involves decompressing the lung before obtaining an image. Theoretically, the placement of a unilateral pleural catheter should decompress the bilateral pneumothorax but what makes this condition intriguing is whether a single side drainage could result in the continuous expansion of both lungs without additional surgical procedures, what is worthy of further study.[4]

The main goals of pneumothorax treatment are to obtain complete lung expansion and to attempt recurrence prevention.[6] We believe that dealing with simultaneous bilateral pneumothorax can start with chest tube drainage as an initial management approach. By shedding light on this distinctive manifestation of pneumothorax, our

objective is to contribute to the enhancement of diagnostic acumen and therapeutic strategies for this uncommon yet clinically significant entity.

CONCLUSION

Awareness of the possibility of this unusual pleural communication is important in a patient who had undergone any type of chest trauma. Understanding the etiology, clinical presentation, diagnostic challenges, and optimal management strategies for this condition is crucial. The rarity and distinctiveness of bilateral pneumothorax in the setting of buffalo chest pose diagnostic and therapeutic dilemmas, requiring an in-depth delineation of effective treatment protocols, ranging from conservative measures to surgical interventions.

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