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SUBCUTANEOUS EMPHYSEMA SECONDARY TO PULMONARY CAVITY AND PNEUMOMEDIASTINUM IN ABSENCE OF PNEUMOTHORAX- A RARE CASE

Medical Science

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ABSTRACT

Spontaneous subcutaneous emphysema and pneumomediastinum in absence of pneumothorax is rare. We report a case of spontaneous subcutaneous emphysema and pneumomediastinum in isolation secondary to fibrocavitatory lesion in the chest along with review of the literature.

KEYWORDS

Subcutaneous emphysema; Spontaneous Pneumomediastinum; Air leak, broncho-cavitory subcutaneous fistula

INTRODUCTION – Subcutaneous emphysema and pneumomediastinum are usually seen in a setting of chest injury. Both occurring in isolation or together is a very rare occurrence. We report a case with both conditions occurring in a known pulmonary tuberculosis patient with a fibrocavitatory lesion.

A 45-year-old male, agricultural labourer, presented with complaints of non-specific pain on right lower chest, sudden in onset after a bout of coughing about 20 days ago. It was followed by swelling over upper half of the chest, more on right side, spreading to neck and face over 2 hours. He had received emergent treatment in form of surgical stabs to relieve the subcutaneous emphysema at a rural medical care centre.

There was no history of trauma, retrosternal pain, or shortness of breath. Patient is a known case of pulmonary Koch's, diagnosed one and half year back, was on ATT but discontinued treatment after five months.

On examination, patient was conscious and coherent. There was swelling over the face, neck and upper half of the chest (Fig. 1). General examination did not reveal anything specific. On examination of the chest, there were no dilated veins. There were multiple surgical incisions measuring approximately 0.5 cm bilaterally. Crepitus was present over the chest and neck on palpation. There was no evidence of mediastinal shift. Review of other systems was unremarkable. Routine blood and Serum Investigations were within normal parameters.

Chest X-ray revealed fibrocavitatory changes in right upper zone with subcutaneous emphysema in the chest and neck (Fig. 2).

Computed tomography (CT) of thorax revealed diffuse subcutaneous emphysema and pneumomediastinum with a cavity in right upper lobe communicating with right main bronchus and subcutaneous tissue (Fig. 3a and 3b).

There was no enhancement after I.V. contrast in these lesions. Patient was treated with high flow oxygen along with ATT. There was slight decrease in swelling and patient was discharged on request.

Fig. 1 Subcutaneous emphysema involving the chest wall, face, neck, and eyelids. Note the stab incision over the chest wall.

Fig. 2 -Chest X-ray revealing fibrocavitatory lesion and pneumomedistinum in the chest with subcutaneous emphysema in the chest and neck

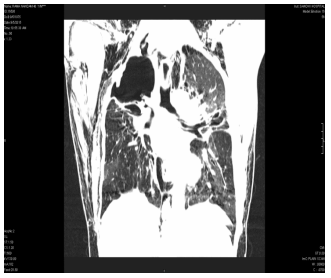

Fig.3a Plain CT chest showing the different levels of broncho-cavitatory-communication

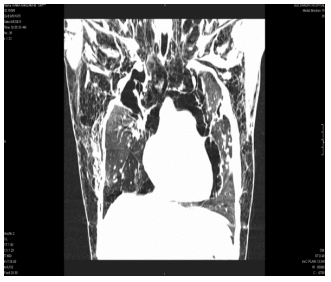

Fig. 3b Plain CT chest showing the cavity to subcutaneous communication.

DISCUSSION

The usual cause of subcutaneous emphysema and /or pneumomediastinum is chest injury.

Spontaneous subcutaneous emphysema and/or pneumomediastinum is rare and occurs secondary to a recognizable coexisting structural abnormality in the lungs.[1]

Weakness of either the alveolar or bronchial wall occurs secondary to Pulmonary koch's.

Mechanism

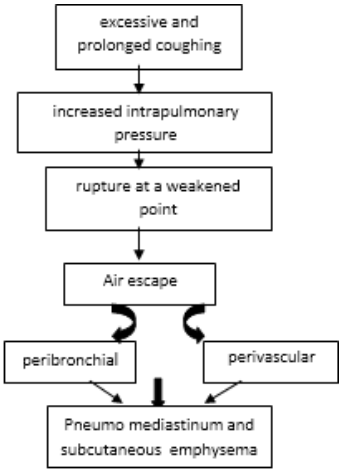

Fig.4 Depicts the mechanism of formation of pneumomedistinum and subcutaneous emphysema.

Spontaneous pneumomediastinum associated with pulmonary cavitation has been reported by Qureshi[3] but pulmonary cavitation complicated by subcutaneous emphysema without pneumothorax or pneumomediastinum has been reported by Pandey et al[9] to the best of our knowledge.

It has also been reported as a complication of asthma with inhaled bronchodilators and nebulization as an additional risk.[5,6] Air is occasionally drawn into the fascial planes of the mediastinum from wounds in the neck, including tracheostomy and surgical procedures in the mouth, pharynx and upper gastrointestinal tract.

Besides tuberculosis, staphylococcal pneumonia, measles, pneumocystis carinii, influenza pneumonia and pertussis are other infections causing subcutaneous emphysema, especially among children.[4]

Radiological studies are essential to diagnose the primary cause and the extent of air leak.

To diagnose pneumomediastinum, routine lateral view along with postero-anterior view should be taken, as 50% of cases that would otherwise be detected on lateral view may be missed.[7]

CT scan is helpful in the diagnosis as in our case, broncho-cavitary-subcutaneous fistula leading to subcutaneous emphysema and pneumo-mediastinum, was demonstrable on CT scan.

Subcutaneous emphysema carries no particular risk of its own. In most instances treatment is palliative and consists of treating the underlying disease and prevention of further air leak. Subcutaneous emphysema is self-limiting and resolution of the air leak occurs by resorption of aberrant air.

However, the primary cause and the associated intra-thoracic air leak such as pneumothorax, pneumomediastinum or pneumopericardium may lead to serious complications.

In such instances, therapeutic efforts are directed to the primary condition and associated intra-thoracic air leak.[8]

Patients with respiratory distress and hemodynamic instability may need tracheostomy and skin incisions over the neck and anterior chest wall.

In our study, we want to emphasis the occurrence of subcutaneous emphysema in association with a fibrocavitatory lesion and pneumomediastinum in absence of pneumothorax. This has not been yet reported elsewhere. Hence, it is to highlight the presence of this entity we present this case report.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent was obtained from all individual participants included in the study.

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