TWO CASES OF MEDIASTINAL EMPHYSEMA

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This condition has been known by physicians for many years. It was only in 1819, Laennec described this affectation as Interlobular Emphysema. According to him this disease is characterized by infiltration of air between the lobules of the lung. When the extravasation exists near the roots of the lungs it speedily extends to the mediastinum and from thence crosses to the neck and over the whole body.

This is a rare condition. Bodey (1961) studied all the cases of mediastinal emphysema seen at Johns Hopkins Hospital from January 1936 to October 1959 and he managed to collect only 15 cases, of which 3 cases were reported by Hamman in 1939. In India only 6 cases have been reported one each by Gupta (1946) and Chakrobaty (1951), and 4 cases by Koshy et al (1961). In this country, Hanam (1955) recorded only a single case.

CASE REPORTS

Case 1: F.H., a Chinese male patient aged 24 years, married; occupation: School Teacher —teaching English in a Chinese School.

Complaints: Pain right side of neck.

History: (Verbatim from patient) I was feeling perfectly normal on Tuesday morning. At about 1.00 p.m. while I was talking in the Staff Room I felt a slight discomfort in the right side of my throat. I thought that an object had remained in the throat, as I had earlier taken my lunch. I then took a glass of water so as to wash the particle down. I immediately discovered a dull pain, on the lower right side of the chest. The pain was further aggravated by deep breathing, attempts at hiccuping or swallowing. While descending the school steps I felt a jarring sensation on the right side of the throat. The pain in the chest became more pronounced while I was driving to the hospital. As there was a huge crowd at the hospital I decided to see my own family doctor. This was approximately 4.45 p.m. I had supper at 7.00 p.m. and decided to sleep. The pain in the left chest became very severe when I tried to lie flat on my back. However, I accomplished this by reclining my back slowly, stopping when the pain was too severe. The moment I relaxed the pain gradually reduced to it's original throbbing pain. But any efforts at moving the major parts of the body caused severe pain to the left part of the lower chest. Relief was then sought by immediately sitting up. But the actions involved in sitting up caused severe pain to the left lower chest. As long as I remained seated, the pain became dull. When I tried to swallow my saliva I could soon feel a sort of rolling action finally ending up in an explosion.

On Examination: General condition fair. No cyanosis and not in shock. Main findings were in the respiratory system. Trachea was central. Except for the crackling sound heard over the praecordium, the rest of the findings were normal. There was in addition a click—exocardiac—heard just internal to the apex beat.

Investigations: Hb. 100%. T.W.7,200, D.C. P.67, L.27, E.2, M.4%. E.S.R. 2. Sputum for A.F.B. negative. E.C.G.: Except for sinus bradycardia, otherwise normal. X-ray—Vide the slides (Fig. 1).

Case 2: A Malay female patient aged 25 years has been suffering from bronchial asthma since childhood. On the night of admission, she suddenly became breathless and also feeling of pain in the neck. She felt her throat was also sore.

On Examination: She was slightly cyanosed and was dyspnoeic. The main findings were in the chest. Her lungs were emphysematous. There was obvious subcutaneous emphysema extending from the sternum to the neck. Rhonchi were heard over both lungs.

Investigations did not reveal any evidence of T.B. X-ray chest shows emphysema subcutaneously and also in the mediastinum. Vide the photos (Figs. 2 & 3).

She was treated with adrenalin, achromycin and luminal. Nothing specific was done to her emphysema. After a few days stay, the emphysema was absorbed.

DISCUSSION

If the cases resulting from trauma, surgical, diagnostic or therapeutic measures are included under this condition then the condition may not be as rare as has been reported in the literature. Bodey (1961) used the following criteria in the study of his cases:—

(1) Demonstration of air in the mediastinum on X-ray.

(2) Presence of subcutaneous emphysema which cannot be explained on any other basis.

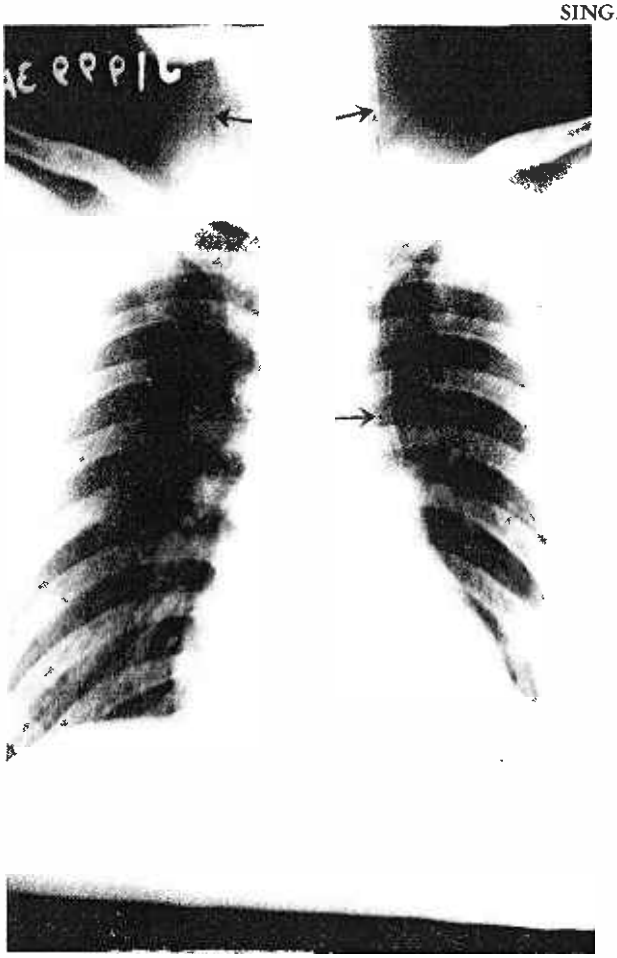

Fig. 1. Case 1. Air in the mediastinum and in the neck

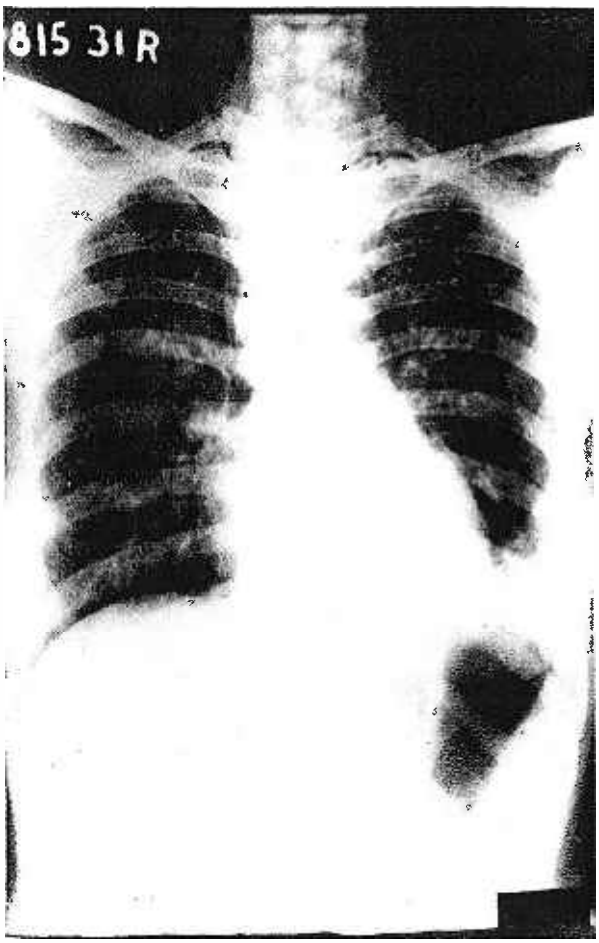

Fig. 2. Case 2. Surgical emphysema in the neck.

Fig. 3. Case 2. Air in the anterior mediastinum.

(3) Presence of a crunching or bubbling sound synchronous with the heart beat called Hammon's sign.

The above two cases and the one reported by Hanam (1955) satisfy the criteria set down by Bodey. In fact one of the 4 cases reported by Koshy should have been excluded if these criteria were to be fulfilled because it arose following presacral air insufflation.

Bodey (1961) analysed his 15 cases and found that both pain and subcutaneous emphysema were the most common manifestations of this condition. The first case above had only pain. It is in this type of case that the diagnosis of the mediastinal emphysema is difficult. Often the diagnosis of coronary thrombosis is made because of the complaint of chest pain. The correct diagnosis of Case I was made when the crackling sound was heard over the praecordium and confirmed by the presence of air in the roentgenography (Vide X-ray 1 and 2). In fact when Hammon (1939) first saw a patient with the complaint of the chest pain and the finding of what he called bubbling crackling sound synchronous with the heart sound, he was unable to make the diagnosis. It was only in the second case he saw, who in addition to these two findings had subcutaneous emphysema, did he realise the significance of this crackling sound. This sign is present only when the air is located between the heart and the anterior chest wall and is present in only 53% of Bodey's cases.

Mediastinal emphysema can be either spontaneous as in Case 1 or associated with some other conditions like asthma as in Case 2. Macklin (1937) carried out experiments in cats, whose lungs were ruptured by forceful distension and found that through the rupture air travels towards the mediastinum along the sheaths of the arteries and often there are continuous channels from peripheral alveoli to the hilus. The interstitial tissue about the bronchi contains no air. He also showed that by inducing pneumothorax artificially, air did not enter the mediastinum. It is for this reason that mediastinal emphysema never results from pneumothorax whereas the latter can occur as a complication of mediastinal emphysema. Both these cases had no pneumothorax.

Sometimes the appearance of fairly extensive subcutaneous emphysema and dyspnoea can be frightening. No specific treatment is required except for the associated condition. In Case 1, the air was absorbed by the tissues. In Case 2 she was treated only for her asthma and the air in the mediastinum and the subcutaneous tissues was left to be absorbed by the tissues. However, if the subcutaneous emphysema is too extensive a few pricks have to be made with the lancet at the lower part of the neck in order to let the air escape from the tissues. Fine et al (1935) found that subcutaneous emphysema can be relieved more rapidly by breathing 95% oxygen. In both cases no occasion arose for any of these methods to be employed.

SUMMARY

1. A report of two cases of mediastinal emphysema.

2. A short discussion on the difficulty of making the diagnosis when there is no surgical emphysema, the aetiology and the treatment.

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