Indian Internet Journal of Forensic Medicine & Toxicology
ISSN 0973-1970, Vol.4, No.1 (2006)

SUBCUTANEOUS EMPHYSEMA OF CHEST WITHOUT BONY INJURY BY BLUNT FORCE – REPORT OF TWO CASES

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Abstract

A report of two cases, both presenting as subcutaneous emphysema of chest without pneumothorax or any bony injury to chest by blunt non-penetrating objects. In one case an allegation was made by accused a syringe has introduced that air. To confirm the allegation air was introduced with a 50 cc syringe in dead bodies subcutaneously in chest & emphysema could be produced easily.

In second case there was extensive surgical emphysema without pneumothorax or any bony injury to chest. It can be concluded that subcutaneous emphysema can occur without bony injury to chest, as well as it can be produced artificially but it requires further confirmation by experiments on living.

KEY WORD: Subcutaneous Emphysema, Trauma

CASE 1

A 39 years old, injured male was examined by Medical after Officer at a Government Hospital with alleged history of assault by blunt objects, a day the incident. As per injury report there was a diffuse swelling on left side of chest & on left forearm. X-ray report showed subcutaneous emphysema of chest on left side without bony injury to ribs and fracture of ulna. The medical officer obtained expert opinion of surgeon to know the cause of subcutaneous emphysema. The surgeon opined that subcutaneous emphysema was due to trauma and the medical officer opined that injury to chest was dangerous to life hence grievous in nature.

The accused complained to Honorable Court that injecting air by a syringe has artificially produced subcutaneous emphysema and requested the victim to be re-examined by a medical board.

On the order of Honorable Court a Medical board was constituted and a panel of three doctors examined the patient about 2 months latter. The panel of doctors again advised X-Ray of chest & as per X-Ray Report, there was no bony injury. Medical Board advised bone scan but no bony injury was detected. The medical Board

referred the case to cardio-thoracic surgeon who also opined that the subcutaneous emphysema was due to trauma.

Looking to the allegation of fabricated emphysema it was decided to inject air by the syringe in dead bodies. It was possible to push the air without difficulty. So, emphysema can be produced by injecting air however it is to be confirmed by experiments in living.

CASE 2

A fifty five year old male patient presented as a case of assault with history of blow by fist & fall. He was admitted in surgical ward. Injured was examined for medico legal purpose & as per injury report he was having abrasions on left parietal region, left forearm lower ¼ anteriorly as well as posteriorly & on left shoulder posteriorly with subcutaneous emphysema on face neck, shoulders & upper part of chest. The X-Ray chest was not showing any bony injury, pneumothorax & haemopneumothorax. A repeat X-Ray was also advised but no bony injury was seen. The C-T Scan revealed extensive surgical emphysema with pneumomediastinum. However pneumothorax or bony injury to chest could be appreciated in C-T Scan also.

The case was refereed to chest specialist who also opined that subcutaneous emphysema is due to trauma. Multiple cuts were made to treat subcutaneous emphysema.

DISCUSSION

Subcutaneous Emphysema of chest after blunt trauma to chest wall in the absence of wound or bony injury is usually secondary to pneumomediastinum may arise following alveolar rupture. In that case air tracks along interstitial and vascular supporting tissue until it reaches mediastinum. From mediastinum it traverse into subcutaneous tissue of neck, chest wall and forearm. Air may also be released directly into the mediastinum following tracheal, bronchial and esophageal rupture in association with chest trauma1. In our cases subcutaneous emphysema after blunt chest trauma in the absence of chest wound or bony injury indicate that subcutaneous emphysema was secondary to pneumomediastinum, as was evident on C.T. Scan in case 2. In case 1 C.T. scan was not done and sometime pneumomediastinum may not be visible on plain X-ray. In these cases there was no evidence of injury to trachea, bronchus or esophagus. In both the cases there was no pneumothorax and bony injury. A case of subcutaneous emphysema of hand and forearm due to high-pressure injection of air 2, and another of involvement of a digit through pre-existing puncture wound 3, ha been described in the literature.

Physical examination is adequate for the diagnosis of rib fractures in almost all conscious patients. Moreover, because of the difficulties in obtaining good radiographic views of all ribs 30-50% of fractures may be missed on radiological examination 4. Delayed films 3-6 weeks later may demonstrate callus formation about the site of fracture. Rib fractures occur in approximately 85% of the cases of non-penetrating trauma 5.

Fractures of cartilage are difficult to delineate radiologically, although films which demonstrate a fracture of sternum suggest the presence of associated cartilaginous injuries, later if its non-union or false joints develops, X-Rays may be helpful.

In case report no.1 the x-ray examination was done again after about 2 and half month, hence callus formation must be evident if there was a missed fracture due to poor radiographic view in earlier films. Secondly in this case the bone scan excluded the evidence of bony injury. Similarly in second case report of the CT scan of chest was done, that also excluded bony and cartilaginous injury.

In the present case reports, there appears to be trauma to lung, pleura, trachea, bronchi and subsequent subcutaneous emphysema with out fracture ribs. Lesions in the bone or soft tissue of the chest wall may be misinterpreted as representing thoracic disease and the most important diagnostic feature. Subcutaneous emphysema may be more obvious than an underlying pneumothorax. Two muscles are commonly visualized. The anterior axillary fold formed by the pectoral muscles is seen curving medially and inferiorly from axilla to the rib cage. In muscular men, the pectoralis major may appear as a continuation of the anterior axillary fold, passing obliquely across both lungs. This muscle is responsible for the increased shadowing over middle and upper part of the lungs. When absent this will give rise to an area of hyper translucency in the region of the lungs, and a misleading impression of emphysema 7, but in both reported cases this muscle was present. It appears to be reasonable to conclude that subcutaneous emphysema can be produced by injection of air by a syringe, however it requires confirmation by further experiments in living. The puncture mark of needle can be detected by careful examination, but difficult to detect if examined after long time as evident from case 1. In all such cases CT scan/ MRI should be advised as in case 2. Pseudomediastinum suggestive of trauma could be appreciated only after CT scanning.

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