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Case Report

Asymmetrical erythematous rash secondary to subcutaneous emphysema

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ABSTRACT

Subcutaneous emphysema is a frequent post-operative complication. Although many cardiorespiratory complications associated with subcutaneous emphysema has been described, skin rashes have not been described as a complication. We present a case of asymmetrical erythematous skin rash secondary to subcutaneous emphysema. To the best of our knowledge this association has not been reported before. It is important to recognise cutaneous changes such as skin rash as a potential complication of subcutaneous emphysema and avoid inappropriate management and prolonged hospital stay. complication.

Keywords: Skin rash, Secondary to subcutaneous emphysema

INTRODUCTION

Subcutaneous emphysema is a frequent post-operative complication. It is seen in over two thirds of patients undergoing laparoscopic procedures.[1] It is usually self-limiting but may result in serious respiratory or cardiovascular complications.[2]

Less severe complications such as widespread skin rash may also occur and is an important sequelae for clinicans to recognise.

CASE REPORT

A 60 year old male underwent elective right mini thoracotomy and mediastinal node biopsy for a pulmonary squamous cell carcinoma. Subcutaneous emphysema developed acutely after intercostal catheter removal on post-operative day three. The patient noted a sudden swelling to his neck several hours after removal. There was associated pain but no cardio-respiratory compromise. Examination revealed palpable subcutaneous emphysema extending from the catheter insertion site to the right chest, neck and arm. Chest X-ray demonstrated a small pneumothorax on the right side. An intercostal catheter was re-inserted. A computed tomography scan was performed at this time.

48 hours after this episode an asymmetrical rash was observed over the right face, neck and upper chest (Figure 1). The skin was erythematous, blanching and non-tender on examination. The distribution of the rash was not dermatomal. In fact it specifically followed the pattern of superficial subcutaneous gas, which can be seen separating the skin from underlying platysma on CT imaging (Figure 2).

The rash progressed in distribution and degree of erythema but no bleeding or skin breakdown was observed. The patient was given one dose of per oral antihistamine and topical moisturizer for 24 hours before ceasing both treatments. Over four days the rash

improved significantly with associated reduction of clinically detectable subcutaneous emphysema (Figure 3).

Figure 1: Initial appearance of erythematous rash on face and chest (right image); note that the white discolouration is applied emollient cream.

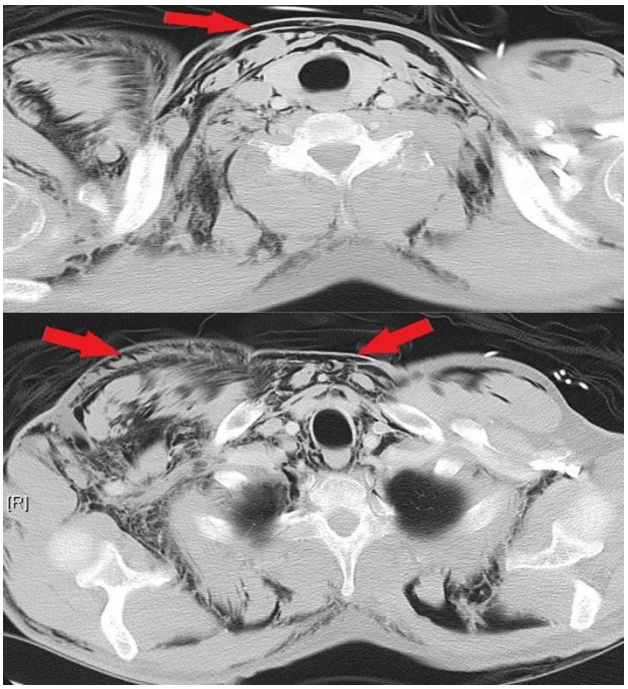

Figure 2: CT imaging showing superficial subcutaneous distribution of gas lifting skin off platysma and subcutaneous fat (red arrows).

Figure 3: Improved skin rash on day four (left) and day six (right).

No other precipitants for skin rash were identified on detailed clinical history and medication review. The patient was discharged home on post-operative day 10. At six weeks follow up the skin rash had completely resolved.

DISCUSSION

Surgical emphysema post thoracostomy is a well-documented complication.[3,4]

The cardiovascular and respiratory sequelae of this complication were well described.[5] However, there were no reports of dermatological changes associated with subcutaneous emphysema. Soft tissue swelling resembling angioedema on initial presentation had been identified but did not include changes in skin colour or development of a rash.[6]

There were no identified precipitants of the rash in this case. The patient had not used any new skin products or detergents, changed diet or been exposed to environmental triggers. There had been no new medications commenced in the preceding 48 hours. Additionally, the patient did not have any history of atopy or previous skin reactions. These factors were considered alongside the distribution of the rash closely following that of the superficial subcutaneous emphysema. With resolution of the rash coinciding precisely with the reduction in clinical findings we have determined that subcutaneous emphysema was the most likely causative factor.

Subcutaneous emphysema resulted from entrapment of air within the subcutaneous layer and can cause dermal separation.[7,8] We postulated that the erythematous skin changes occurred secondary to increased vascularity within the subdermal plexus. This may be secondary to local tissue ischaemia associated with infiltration of gas separating the skin from the underlying subcutaneous fat layer.

This case detailed the clinical findings observed in the development of skin rash associated with subcutaneous emphysema after a thoracic surgical procedure. The condition appeared to be self-limiting with resolution of subcutaneous emphysema and may be managed with conservative measures.

CONCLUSION

Skin rash caused by subcutaneous emphysema was a rare association and knowledge of this association was important for clinicians to direct management of the rash and to provide appropriate pre-operative warning as part of the informed consent process. Furthermore, understanding the aetiology of the rash can provide reassurance to both clinician and patient thereby reducing hospital stay.

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