



SUBCUTANEOUS GAS FORMING INFECTION OF NECK: A RARE CASE

General Surgery

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ABSTRACT

Roentgenographic evidence of soft-tissue gas, usually evokes the dread of clostridial gas gangrene, in clinicians. Here, we present a 47-year old lady, with clinical features of cellulitis, and, radiological findings of subcutaneous emphysema, who showed significant improvement on conservative management with empirical antibiotics. The subsequent clinical course ruled out clostridial infection and lead to a diagnosis of a much more benign, non-clostridial gas-forming infection.

KEYWORDS

INTRODUCTION:

Gas-forming infections are a rare entity in the neck and mediastinum regions; when occurring, these are often in immune-compromised patients. Subcutaneous gas-forming infections are generally caused by clostridial sp in diabetic patients, but sometimes, there are rarer cases caused by non-clostridial sp. too. These are associated with higher mortality and need urgent medical and surgical treatment, to avoid severe sepsis and mortality.

Case History:

Here we present the case of a 47-year-old lady, with albinism, who had complaints of pain and redness in upper part of neck, on the right, suggestive of cellulitis (Fig 1). Clinical examination revealed tenderness and superficial crepitus, without any evidence of limitation of muscle movement, or of systemic manifestations of sepsis.

Slide-smear examination and culture of aspirate from the site of inflammation could not detect any specific organism. CT scan in both transverse and sagittal axes, reported multiple air bubbles in the subcutaneous tissue plane (Figs 2 and Fig 3).

Symptoms and signs showed complete resolution on treatment with empirically chosen antibiotics (Co-Amoxyclav). The patient had no history of recurrent infections or any major disease in the past.



Fig 1 Redness in upper part of the neck, on the right

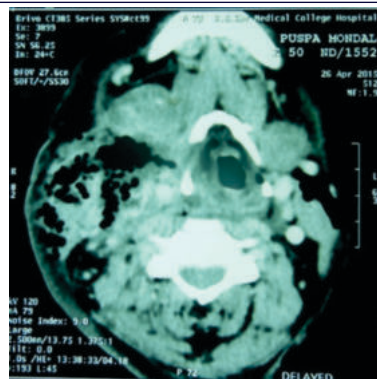


Fig 2 CT scan (Transverse) showing gas in subcutaneous tissue plane in infratemporal region and cervical region

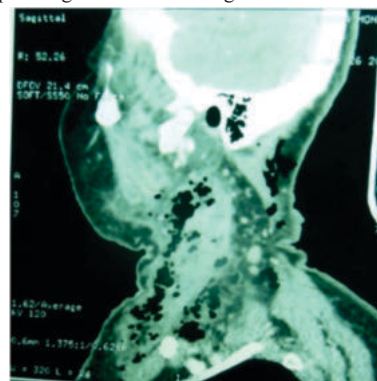


Fig 3 CT scan (Sagittal) showing gas in subcutaneous tissue plane

DISCUSSION:

Presence of air or gas in the subcutaneous tissue plane is referred to as 'Subcutaneous Emphysema (SE)'. It is more common in soft tissues of chest wall or neck [1]. In spite of numerous causative factors (e.g. blunt or penetrating trauma, infection, malignancy etc), benign SE is rare, barring trauma [2]. SE is diagnosed by physical examination

(crepitation on palpation) and radiological studies showing evidence of air [1] (e.g. air pockets appearing as dense-black areas on CT [3]).

Our patient initially presented with signs and symptoms of cellulitis. The presence of soft-tissue gas on CT raised the possibility of progression to necrotizing fasciitis [4]. However, in our case the course was benign, without evidence of any systemic involvement; the prompt response to antibiotics was suggestive of an infectious etiology. The most common cause of gas gangrene is *Clostridium perfringens* (80%) [5]. However, numerous other non-clostridial gas-forming infectious agents have been reported e.g. *Klebsiella pneumoniae*, Group A streptococcus, *E. coli*, *Proteus*, *Bacteroides*, *Pepto-streptococcus* and *Aeromonas hydrophilia* [5,6]. Generally, in clostridial infections, there is extensive necrosis without significant suppuration and microscopical examination of discharge reveals Gram positive square-ended rods with numerous red cells and no pus cells. Tissue culture in 70% cases of cellulitis are culture negative [7]. In our case, the benign course and absence of any clostridial organism in smear, or on culture, ruled out the chances of clostridial gas gangrene and pointed towards a non-clostridial subcutaneous gas infection. The site of infection was neck, which occurs in approximately 4.2% cases of non-clostridial gas gangrene [8]. As the patient had albinism the question of associated immune deficiency also arises as hypopigmentation may represent a feature of genetic disorders characterized by immunodeficiency, including Chediak Higashi Syndrome (CHS), Griscelli Syndrome (GS), Hermansky-Pudlak type 2 Syndrome (HPS2) and MAPBP-IP-deficiency Syndrome. All these diseases are associated with recurrent infections and varied neurological and haematological features [9]. However, our patient had no major illness in her lifetime.

We feel, this case conveys certain important messages. First, non-traumatic, benign subcutaneous emphysema is a relatively rare condition. Secondly, roentgenographic evidence of gas in the tissue need not always be gas gangrene. However, patients with even minimal pain and inflammatory changes, stable hemodynamic parameters and no obvious manifestation of systemic sepsis, must be closely monitored, to avert avoidable morbidity and mortality due to necrotising fasciitis. Thirdly, although cultures may be negative, infectious etiologies, especially non-clostridial subcutaneous gas forming agents must be treated adequately, with empirical antibiotics.

CONCLUSION:

- NCGG is a more lethal and less commonly found variant of gas gangrene
- It may occur in immunocompetent patients even without history of trauma
- Albinism may be a precipitating factor
- only antibiotic therapy may be sufficient in early cases without any surgical therapy

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