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Cellulitis due to gas-producing organism with niveau formation

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LETTER TO THE EDITOR

**A case of cellulitis due to gas-producing organism with
niveau formation.**

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Dear Editor

A 40-year old obese man presented to the emergency room of Nayoro City Hospital with a painful erythema accompanied by high fever on his right upper back of 3 days duration. He noticed acne-like papules on his back a week before. Past and family histories were not remarkable. Physical examination revealed a marked erythematous swelling on his upper back (Fig. 1). His temperature was 39°C, blood pressure, 140/75 mmHg and heart rate was 72/min. Routine laboratory studies showed white cell count was 15,200/ mm², C-reactive protein (CRP) was 12.6 mg/dl, and fasting blood sugar was 130mg/dl. Liver and renal function tests were within normal ranges. Chest radiography revealed niveau-like gas formation in subcutaneous tissue (Fig. 2). Under the suspected diagnosis of gas gangrene, incision and drainage was performed. A large amount of gas with a strong fecal and foul-smelling purulent fluid was

discharged. Intravenous piperacillin did not alleviate his fever, and pus discharge remained with high C-reactive protein (21.3mg/dl). Extensive debridement was performed 5 days after the admission and all necrotic tissues were removed; the fascia was not affected at the debridement. Antibiotic was changed to imipenem/cilastain sodium.

Histopathological examination disclosed widespread necrosis of subcutaneous fat and thrombosis of blood vessels. A dense inflammatory infiltrate was composed mostly of neutrophils (Fig. 3). A culture study isolated peptostreptococcus species only (asaccharolyticus and magnus). After the debridement, his general condition gradually improved, and 3 weeks after the operation, the wound was closed by mesh skin graft.

Gas-producing soft tissue infections are classified as clostridial and non-clostridial types. Most non-clostridial gas-producing infections are caused by a mixture of

aerobic and anaerobic bacteria, which act synergistically. Non-clostridial infection usually begins from cellulitis and expands rapidly through fascial planes by polymicrobial synergism. Non-clostridial gas-producing infections usually show scattered small subcutaneous gas lesion and niveau-like gas formation is very rare. In our case only a single peptostreptococcus species was isolated. The slowly spreading cellulitis might have resulted in anaerobic environment with rapidly-grown peptostreptococcus producing a large amount of gas. Gas-producing infection with niveau formation has been described in only one case¹ with anatomical location of back as our case.

The operation findings indicated the intact fascia with only subcutaneous tissue infection. Simple cellulitis can be treated in most cases with antibiotics alone. Our patient, however, required additional surgical debridement, because of massive necrosis and thrombosis

in subcutaneous fat. Gas formation has been known to reflect anaerobic bacterial activity² and, therefore, all necrotic tissue should be excised.

Peptostreptococcus species are normal inhabitants in the bowels and oral cavity. These bacteria are one of the most frequent anaerobes in soft tissue infection, but are usually isolated with other aerobic and anaerobic bacteria. Purely anaerobic soft tissue infections are not common^{3,4}, and usually anaerobic bacteria proliferate following aerobic bacterial infection. The patient was obese in our case and his metabolic condition might have contributed to the soft tissue infection caused by the anaerobic bacteria with a unique niveau formation.

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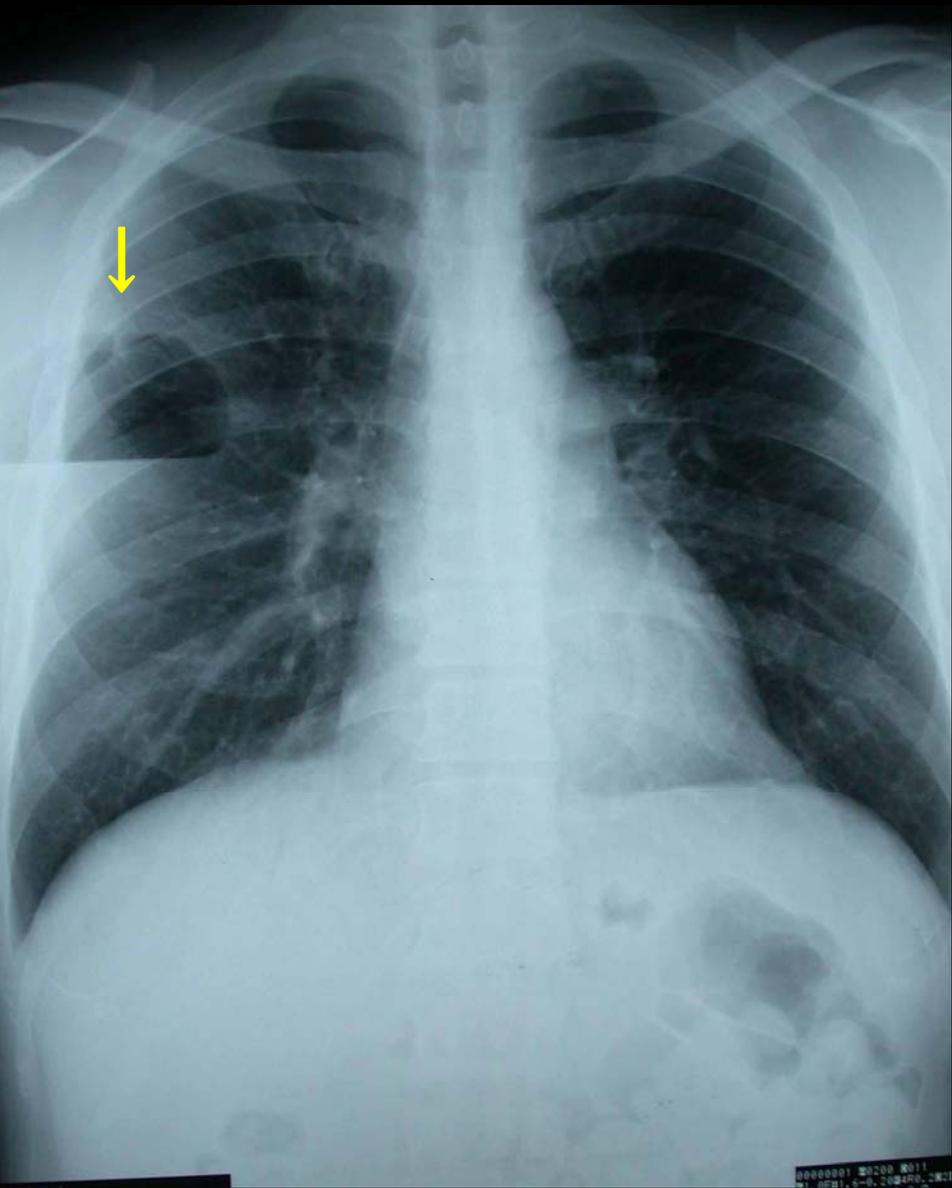
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Fig. 1 Marked swelling and erythema on the upper back

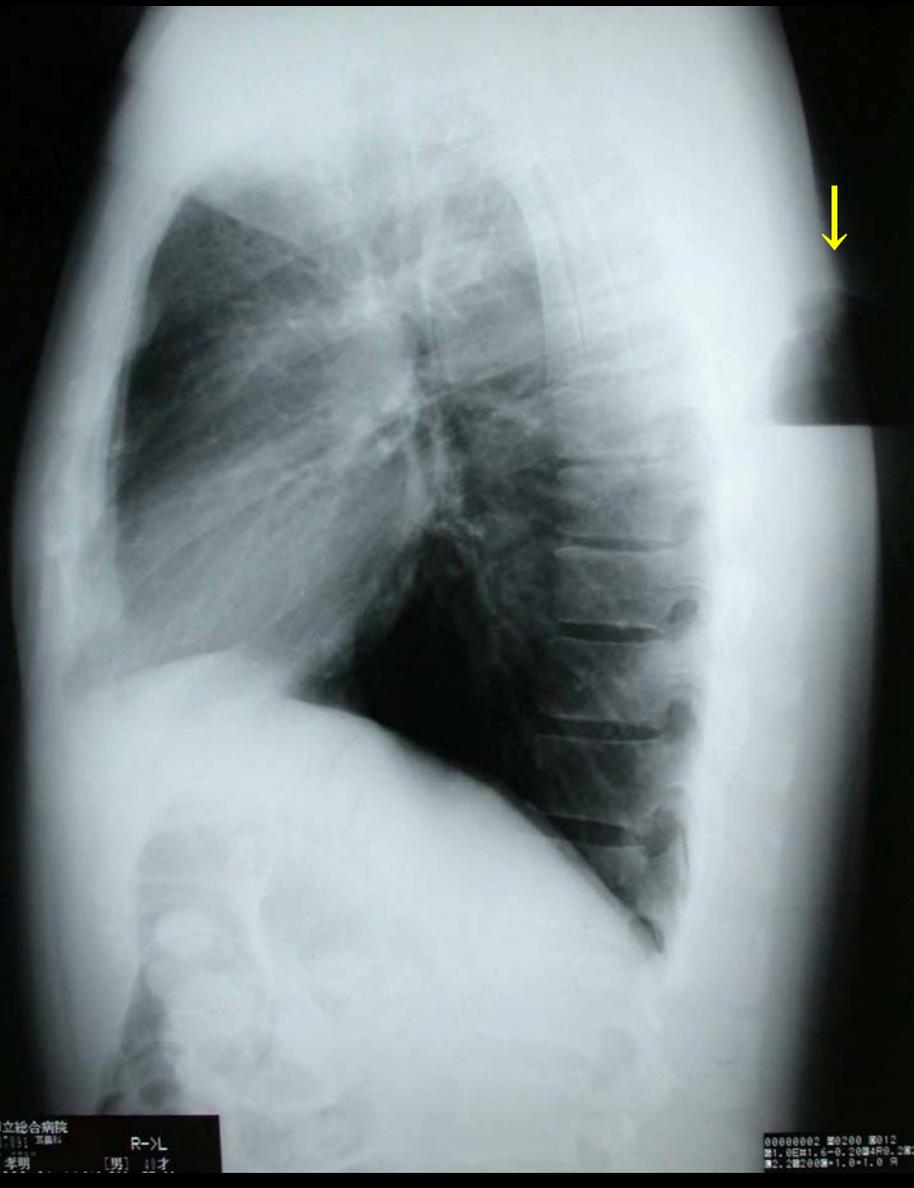
Fig. 2 Chest radiograph revealed a niveau like gas formation (arrow)

Fig. 3 Diffuse necrosis, prominent vascular thrombosis,
and neutrophilic infiltrates





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