The Journal of Laryngology and Otology
May 1994, Vol. **108**, pp. 435–437

Cervical necrotizing fasciitis and tonsillitis

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Abstract
We present a case of cervical necrotizing fasciitis following quinsy in a previously fit and healthy man. This is a potentially fatal condition with few specific clinical signs that requires early diagnosis and surgical debridement. Other features of the disease are discussed.

Key words: Fasciitis; Necrosis; Neck; Tonsillitis

Introduction

Meleney (1924) recognized the dangers of streptococcal gangrene and the importance of wide surgical debridement in its management. A severe subcutaneous infection with mixed organisms which leads to massive fascial necrosis before the overlying skin becomes nonviable is now recognized as necrotizing fasciitis (Ward and Walsh, 1991). The delay in skin change conceals the underlying necrosis and the patient becomes unwell beyond the signs of his illness. In general and gynaecological surgery the condition of necrotizing fasciitis (which includes Fournier's gangrene and Meleney's gangrene) is well recognized and even with aggressive treatment has a mortality rate of 40 per cent. In the head and neck necrotizing fasciitis is a very uncommon condition. We describe a case where a quinsy was complicated by necrotizing fasciitis and although diagnosis was delayed treatment was successful. The multidisciplinary approach to the case is highlighted and the literature reviewed.

Case report

A 51-year-old businessman presented via his general practitioner to the accident department with a seven-day history of sore throat, a three-day history of progressing dysphagia for all but fluids and a right facial swelling. Having recently stopped smoking and being a social drinker the only relevant past history was of recurrent tonsillitis. On examination he was apyrexial (36.1°C) and had a prominent, tense tender right facial and cervical swelling with overlying cellulitis extending to the nipple line. There was trismus and a right peritonsillar swelling was noted. A diagnosis of quinsy with secondary parotitis was made.

He was admitted to hospital, under the care of the ENT department, and started on broad spectrum intravenous antibiotics (cefotaxime 1 gm qds., flucloxacillin 500 mg qds., and metronidazole 500 mg tds). The white count was elevated at 18 400 mm^3, electrolyte estimation and blood glucose were normal. An ultrasound scan confirmed enlarged parotid and submandibular glands with associated lymphadenopathy. A large peritonsillar abscess was drained of foul smelling pus which grew *Streptococcus milleri*, nonhaemolytic streptococci and anaerobes which were all sensitive to penicillin and metronidazole. The antibiotic regimen was altered accordingly. A CT scan was performed which showed no evidence of an abscess but despite appropriate antibiotics in high doses the patient's condition deteriorated over the next four days. An area of necrotic skin of 6 cm diameter appeared over the right pectoral region which discharged foul smelling thin fluid. The white count rose to 26 600 mm^3. A CT scan of the neck was repeated and this revealed gas in the soft tissues of the right neck and parotid (Figure 1). Consultation with both the departments of infectious diseases and general surgery led to a diagnosis of necrotizing fasciitis. Five days after admission the patient was taken to theatre for urgent excision of necrotic tissue.

Incision of the cellulitic skin revealed minimal bleeding and underlying this was black offensive dead tissue which extended from the right temple to the nipple line and deep towards the pharynx. Debridement required excision of skin, fat, fascia, parotid, facial nerve, submandibular gland, angle of mandible and some of the contents of the infratemporal fossa (Figure 2).

Post-operatively the patient required assisted ventilation for 15 days. No inotropic support was required and nutrition was maintained via a nasogastric route. On the first post-operative day the white count fell to 13 500 mm^3. Betadine soaked wound dressings were changed four times daily and the patient returned to theatre for further minor debridement. Once extubated the plastic surgery department took over his care and one month after presentation all the granulating areas were covered with a split skin graft and he was discharged to his home. Subsequently he underwent a crossed facial nerve graft using free sural nerve from the left buccal division of the VIIth cranial nerve to the right nasolabial angle. Three months later a free latissimus dorsi myocutaneous graft was used to fill the facial defect. At this time a nonvascularized rib graft was used to reconstruct the mandible. At review 10 months after the reconstruction there was movement in the grafted latissimus dorsi (via the crossed facial graft) and the free rib had effectively stabilized the mandible.

Discussion

Necrotizing fasciitis of the abdomen and perineum is well recognized and has a mortality of 40 per cent (Ward and Walsh, 1991). In the head and neck it remains a rare condition. Soft tissue infections present a spectrum of disease from erysipelas to gangrene depending on the depth of skin and subcutaneous tissue involved. In an attempt to clarify the situation Kalbacha *et al.* (1982) have classified these into four groups of increasing severity based on the depth of tissue involved and suggested appropriate treatment for each group. In this classification necrotizing fasciitis is a type III infection which, when associated with the myonecrosis as in this case, becomes type IV requiring surgical debridement and cardiopulmonary support.

Accepted for publication: 1 December 1993.

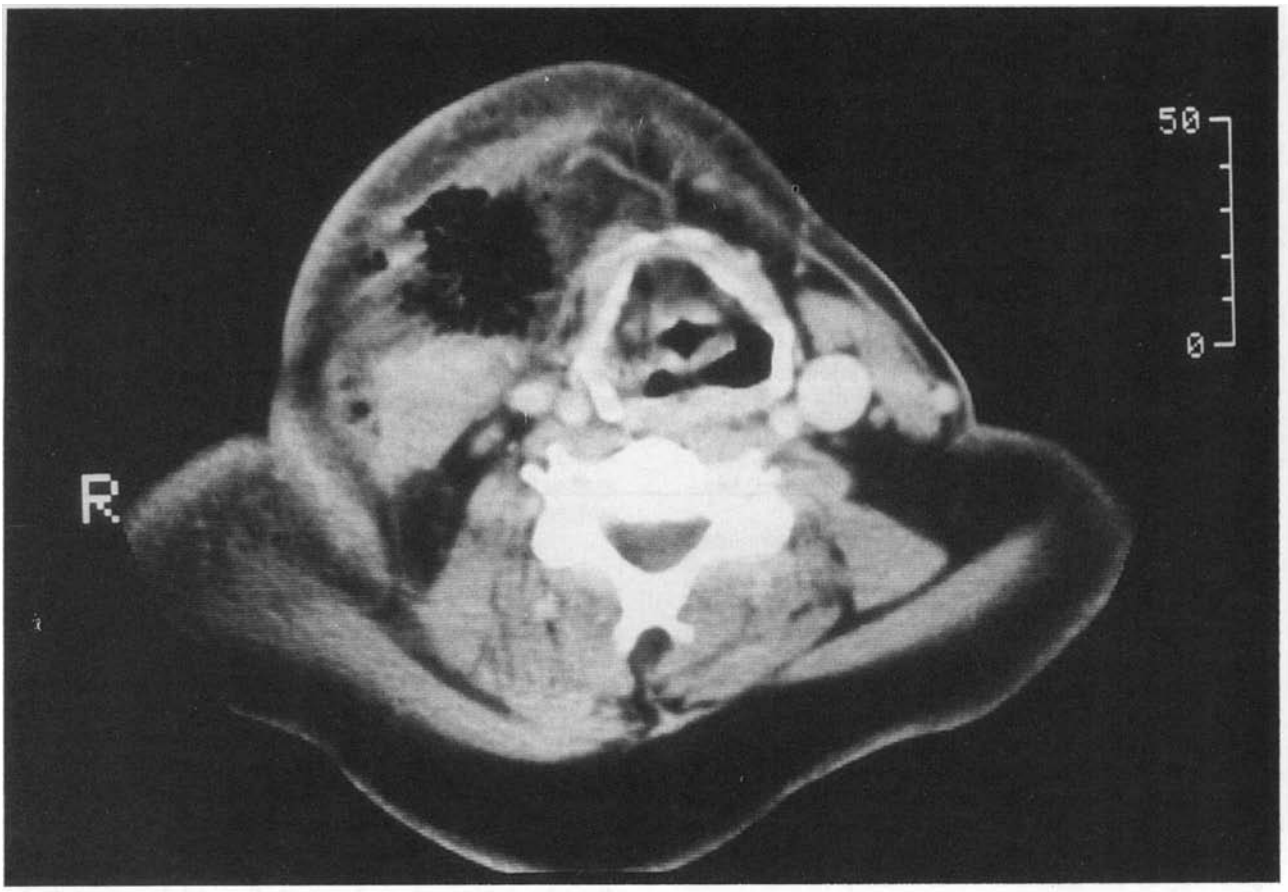

FIG. 1
Axial CT scan of neck showing gas in the tissues and displacement of the thyroid cartilage.

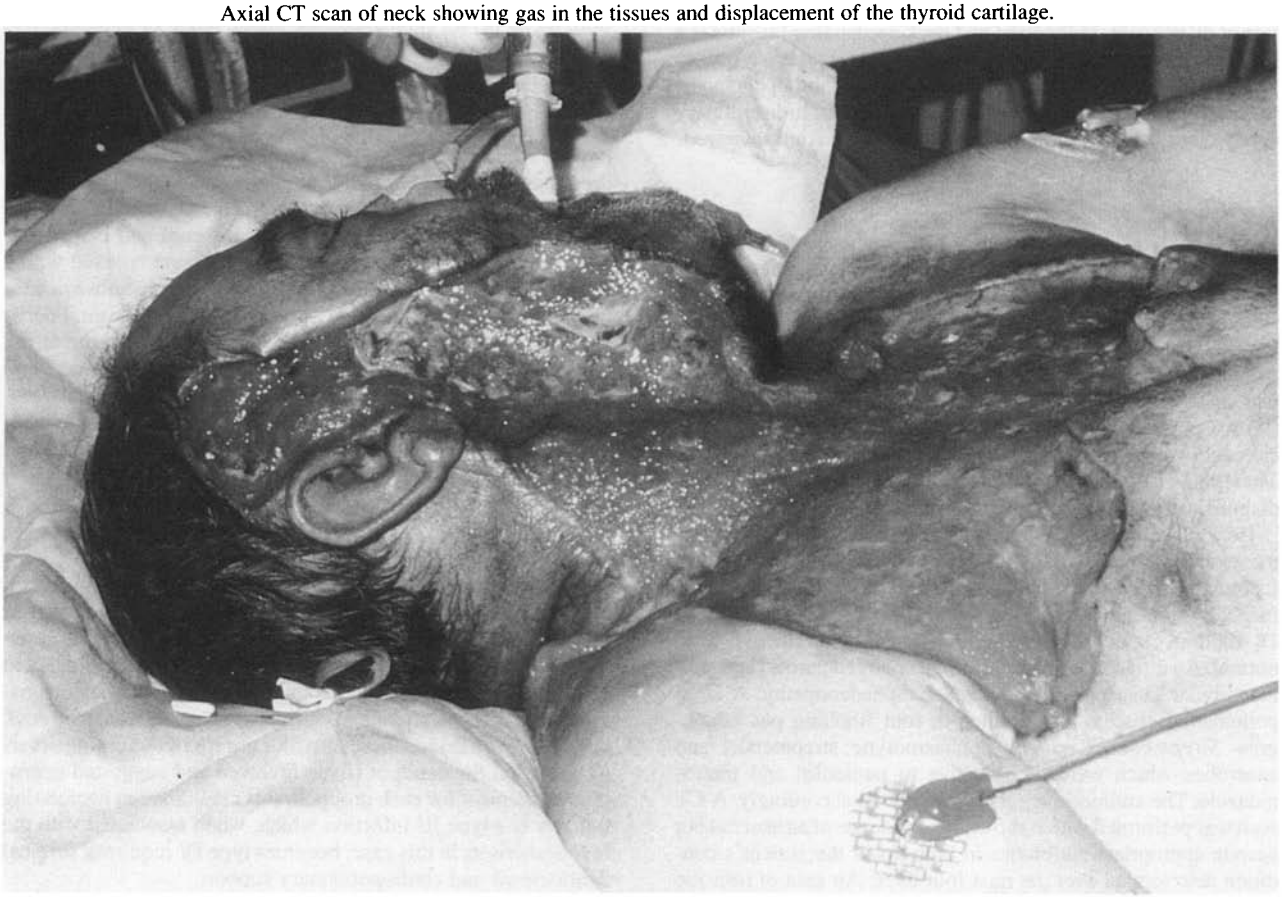

FIG. 2
The defect following surgical debridement (see text for details of removed tissue).

https://doi.org/10.1017/S002221510012701X Published online by Cambridge University Press

There are now 19 cases of fasciitis reported involving only the face, eyelids and periorbita and these have a mortality rate of 16 per cent (Yamaoka *et al.*, 1990; Kronish and McLeish, 1991; Rhys Williams *et al.*, 1992). Legreid and Hendrix (1989) reported 37 cases of cervical necrotizing fasciitis in 1988 since when a further 11 have been reported (Moss *et al.*, 1990; Valko *et al.*, 1990; Lalwani and Kaplan, 1991; Rapoport *et al.*, 1991). These 48 cases of cervical necrotizing fasciitis had an overall mortality rate of 30 per cent. It is possible that the thinner skin of the face hides the underlying necrosis less, so that diagnosis and definitive treatment are not so delayed and the earlier intervention leads to improved survival in the facial group.

Of these 48 cases of cervical necrotizing fasciitis, 37 were males (average age 44 years). Twenty-eight cases (58 per cent) were related to dental trauma and eight (17 per cent) arose from primary tonsillar infection. The remaining 12 (25 per cent) were of miscellaneous origin. Fourteen cases were associated with diabetes and this group had a higher mortality rate of 43 per cent. Another five (10 per cent) had associated ischaemic heart disease, carcinoma or were drug abusers. The remaining 29 (60 per cent) had no associated disease or evidence of immune incompetence.

Balcerak *et al.* (1988) have reviewed the presentation and management of this condition. Classically it starts with an injury followed two to four days after by the skin becoming smooth, shiny and tense. As the subcutaneous necrosis progresses, the skin eventually becomes dusky with the appearance of blue necrotic blisters which discharge thin, grey and offensive fluid. Diagnosis may be aided by radiology, microbiology and histology. Ultimately skin incision and excision to demonstrate subcutaneous necrosis is both diagnostic and therapeutic. Supportive therapy includes broad spectrum antibiotics and such intensive care as the patient's condition dictates. It is suggested that in the head and neck the excellent vascularity of the skin allows multiple incisions and insertion of drains to manage the condition with minimal skin loss. In the case we describe the associated muscle necrosis would not have responded to such measures and we would emphasize that in a type IV infection there is no alternative to complete surgical debridement. Although primarily infectious in origin the associated thrombosis and necrosis leads to poor antibiotic penetration, as in this case, where despite five days appropriate antibiotics, the patient's condition deteriorated.

Conclusions

This case demonstrates that necrotizing fasciitis can affect fit patients and, for no obvious reason, can rapidly become a life-threatening condition. Outward signs are few and nonspecific leading to delay in diagnosis and treatment. Early surgical treatment is mandatory, but even with surgery, antibiotics and cardiopulmonary support the condition has a high mortality rate.

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