The Journal of Laryngology and Otology
February 1983. Vol. **97.** pp. 193–196

Necrotizing fasciitis

by

A. B. DRAKE-LEE, F.R.C.S., SHEENA J. BROUGHTON, M.R.C.P.,
ANITA RAMPLING, PhD., M.B., M.R.C.Path., J. M. LANCER, D.L.O., and
D. A. MOFFAT, B.Sc., F.R.C.S. (Cambridge).

Introduction

Necrotising faciitis is a rare condition which predominantly affects the tissues of the abdominal wall or perineum, following surgery or trauma. We describe a case involving the neck which posed particular management problems.

Case Report

Three weeks prior to admission a 24-year-old epileptic, insulin-dependent diabetic, presented to her general practitioner with a sore throat which was treated with oral phenoxymethylpenicillin but to no effect. Several days later she noticed a painful lump on the right side of her neck which gradually enlarged and caused difficulty in swallowing.

On admission she was pyrexial (39 °C), toxic and confused, with a large red swelling involving the right side of her face and neck. The erythema started at the zygoma and extended over the parotid, down the neck and on to the chest just below the clavicle. It extended to the midline anteriorly, and posteriorly to the anterior border of the trapezius. Crepitus was elicited on palpation of the neck, and the mass was fluctuant below the angle of the jaw (Fig. 1). Trismus did not permit an initial examination of the oral cavity but under anaesthesia the teeth and tonsils appeared normal and pus was seen to issue from the parotid duct. The larynx was displaced to the left. Investigations showed a polymorph leucocytosis of 27.5×10^9/L. Plain X-rays of the neck showed gas in the subcutaneous tissues (Fig. 2).



FIG. 1

Pre-operative extent of erythema as indicated by arrows. Abscess shown by *.

Operation

Chemotherapy with intravenous benzylpenicillin 8 million units daily i.v., flucloxacillin 4 grams daily i.v. and metronidazole suppositories 4 grams daily p.r., was started prior to surgery. A collar incision was made over the fluctuant area below the angle of the jaw. Foul-smelling green pus and gas were released from a 5 cm. diameter cavity bounded by the tail of the parotid, the sternomastoid muscle and the

https://doi.org/10.1017/S0022215100093981 Published online by Cambridge University Press



FIG. 2a
Lateral neck X-ray, showing gas in subcutaneous tissues.

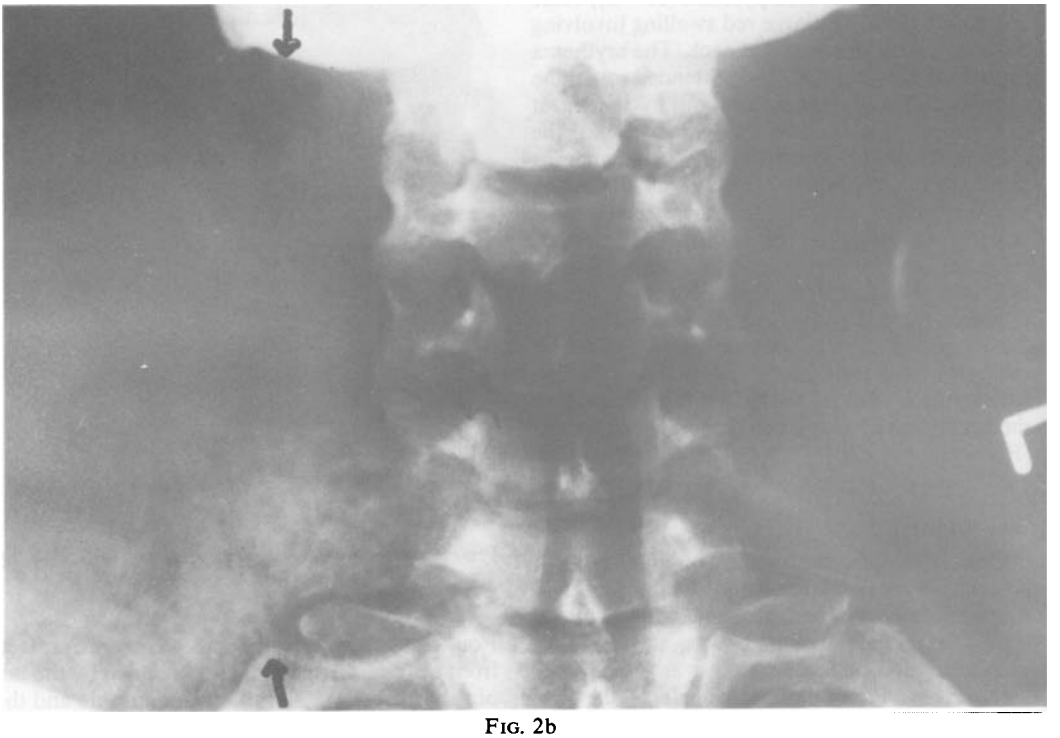


FIG. 2b
A-P X-ray, showing gas limited to right side and airway displacement to left.

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great vessels. The wound was debrided and the pus sent for culture. (A large corrugated drain was inserted into the cavity). After two days, further liquefaction and crepitus were felt above the right clavicle. The area was opened and debrided, the subsequent cavity extending to the limit of the initial erythema: the wound was packed with Eusol. No further extension took place, but after 10 days one piece of skin became necrotic, requiring excision together with underlying tissue.

The cavity was then packed for two weeks until all drainage ceased. The wounds were covered with a dry dressing and the patient was discharged. The wounds have subsequently epithelialized (Fig. 3).

Bacteriology

Streptococci and gram-negative bacilli were seen in direct smears and cultures yielded:

Streptococcus bovis, Peptostreptococcus sp. (penicillin-sensitive), Bacteroides melaningenicus ss. melaninogenicus (strain 1 penicillin-sensitive: strain 2 penicillin-resistant) and an unidentifiable bacteroides sp.* which was penicillin-resistant. All three Bacteroides spp. were sensitive to metronidazole and cefoxitin. The gas production and foul odour were presumably due to the anaerobic components of the flora.



FIG. 3
Post-operative wounds granulating over.

Chemotherapy

Once the culture results were obtained the therapy was modified by the substitution of cefoxitin 8 grams daily i.v. for cloxacillin. Cefoxitin was used because the addition of a ß-lactamase stable cephamycin was thought helpful in treating a mixed aerobic/anaerobic infection which included ß-lactamase-producing Bacteroides spp. The cefoxitin should protect the benzylpenicillin from destruction by the ß-lactamases and allow it to exhibit its greater potency on the sensitive bacteria. These antibiotics were continued for 10 days until after the final debridement was performed.

Discussion

The most common serious neck infections originate from the viscera and spread outwards to form deep abscesses. Necrotizing fasciitis is very different from this. It is a slowly progressive spreading gangrene of the subcutaneous fat and deep fascia which tends to undermine the skin, leaving it relatively intact until late in the course of the infection. It is rare to find this lesion in the neck and, although its occurrence there has been documented, no details of the extent or specific problems of treatment at this site have been included (Stone and Martin, 1972). It usually occurs on the abdomen, perineum or lower limbs following trauma or surgery but, in a quarter of all cases, there is no obvious portal of entry for infection (Rea and Wyrick, 1970). In our patient it seemed likely that the infection started as a parotitis. Pus was seen in the right parotid duct and the organisms isolated from the lesion were those which are commonly found in the mouth. The spread of infection was along the deep investing layer of cervical fascia. Diabetes predisposes to all types of severe infections, including necrotizing fasciitis. 47/63 patients described by Stone and Martin were diabetics: this finding was confirmed in other studies (Rea and Wyrick, 1970; Tehrani and Ledingham, 1972). The overall mortality is 30 per cent.

There is confusion in recognizing this disease as a clinical entity because of multiple

* Public Health Laboratory Service Anaerobic Reference Laboratory, Luton were unable to identify this isolate further.

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descriptions without adequate bacteriological data. Meleney (1924) and Brewer and Meleney (1926) first described 'haemolytic streptococcus gangrene' and 'progressive gangrenous infection of the skin'. Wilson (1952) first used the term 'necrotizing fasciitis'. The organisms isolated by Meleney and Brewer were either haemolytic streptococci alone, or mixtures of staphylococci with micro-aerophilic streptococci which together, but not individually, could produce similar lesions in experimental animals. Since then there have been many descriptions of necrotizing fasciitis and it is clear that a number of combinations of bacteria can cause the same clinical picture. Modern anaerobic culture techniques have shown that anaerobes are usually present in the lesions. Our findings in this patient are in accord with those of Giuliano *et al.* (1977), who demonstrated a mixture of anaerobes and facultative anaerobes in 13 out of 16 patients with necrotizing fasciitis.

Surgical approach and management

By the time the patient presents, he is likely to be very ill and the lesion well advanced. In addition to antibiotics, correction of his circulatory and metabolic state is required, before surgery. Historically the method of surgical approach was by multiple linear incisions to allow widespread debridement of underlying fat and fascia. As the true extent of fascial involvement became apparent it was often necessary to debride the wound further (Meleney, 1924; Wilson, 1952; Rea and Wyrick, 1970). This method was challenged by Tehrani and Ledingham (1977), who advocated total excision of the skin with extensive debridement. The skin was de-fatted and used for grafting.

While this may be practicable for the abdomen, the loss of skin cover in the neck and exposure of the great vessels would pose unacceptable risks. The former approach of multiple incisions was used for our patient and the area under the flaps cleared by irrigation with Eusol and hydrogen peroxide. The wound was loosely packed with ribbon gauze soaked in Eusol. The packs were removed when drainage ceased and the wounds left to granulate. Appropriate antimicrobial chemotherapy was started as soon as possible. The value of hyperbaric O_2 in preventing further spread of anaerobic infection is debatable (Tehrani and Ledingham, 1977) and it was not given to our patient.

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Address for correspondence:
A. B. Drake-Lee,
ENT Department,
Addenbrooke's Hospital,
Hills Road,
Cambridge CB2 2NJ.

https://doi.org/10.1017/S0022215100093981 Published online by Cambridge University Press