***Aeromonas hydrophila* infection of a scalp laceration (with synergistic gas-gangrene)**

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INTRODUCTION

Severe infection of scalp lacerations are rare. Gas-gangrene has been recorded in association with depressed fractures of the skull (Sutcliffe *et al.*, 1988). *Aeromonas hydrophila* is increasingly recognized as a potential pathogen in fresh water wounds. A synergistic infection is described.

CASE REPORT

A 30-year-old man sustained a dirty irregular V-shaped laceration to the vertex of his scalp on diving head first into a freshwater pond. There was no associated injury or loss of consciousness. No fracture or foreign bodies were seen on the initial skull X-ray. The wound was cleaned and sutured at a nearby accident and emergency (A&E) department.

Two days later he returned complaining of pain over the scalp wound. He was admitted to hospital and antibiotic treatment begun. Forty-eight hours later he was transferred to the local neurosurgical unit. By this time his scalp had become extensively cellulitic with surgical emphysema. The wound was oozing purulent material. He was pyrexial at 39 celsius, with cervical and occipital lymphadenopathy. He was neurologically intact. A CT head scan confirmed marked soft-tissue swelling of the scalp and face, with extensive sub-galeal air and foreign material. There was no skull fracture. (Fig. 1)

At operation a thorough debridement was performed excising necrotic galea and periosteum to healthy margins. Post-operatively his chemotherapy included penicillin 2 g 4 hourly, gentamicin and metronidazole. Bacteriological culture indi-

Fig. 1. CT head scan showing surgical emphysema of the scalp.

cated infection with *Clostridium perfringens*, *Streptococcus faecalis* and *Aeromonas hydrophila*.

The patient's condition improved over the next 48 h. The pyrexia settled and the wound discharge ceased. His recovery was otherwise unremarkable other than a small collection which settled following aspiration. After 5 days his antibiotic treatment was changed to oral ciprofloxacin, which he continued to take after discharge. He remained well at follow-up with no neurological deficit.

DISCUSSION

Infective complications of scalp lacerations are uncommon, and when present normally minor in nature. Overt infection due to *Clostridia* and *Aeromonas* is rare in the vascular tissue of the scalp. Such infections however, are associated with significant morbidity and mortality (Nallathambi *et al.*, 1987). Lacerations sustained in freshwater are known to be at risk of infection with *Aeromonas* species (Hanson *et al.*, 1977; Skiedzielski *et al.*, 1990). Appropriate chemotherapy is necessary to combat such infection as the organism is resistant to usual antibiotics (Penicillins or Cephalosporins) given in the A&E department. Although previously thought to be an opportunistic infection in the debilitated patient, there are increasing numbers of cases reported in previously healthy individuals following freshwater injuries (Scott *et al.*, 1978). Staff in A&E departments need to be aware of this potentially infective agent, as water-based leisure activities are on the increase. At the initial assessment and suture the patient's scalp was not shaved. The practice of shaving the scalp prior to repair of lacerations having lost favour in many A&E departments. In one series Howell *et al.* (1988) found no increase in wound infection rates in wounds explored and sutured without pre-shaving wound edges. In large, irregular dirty lacerations however it is mandatory to pre-shave the area to assess

the wound adequately and facilitate debridement and subsequent closure. This case demonstrates that inadequate primary exploration and surgical toilet can and did lead to gross infection of the scalp.

The finding of *Clostridium perfringens* in the wound indicated devitalized tissue was present during the primary exploration, and appropriate debridement not performed. This led to the establishment of gas-gangrene. In combination with *Aeromonas hydrophila* (a ubiquitous contaminant of freshwater ponds) with its array of cytotoxic enzymes, the degree of tissue destruction and fasciitis that followed is readily understood. The most appropriate chemotherapy for the latter is Ciprofloxacin, with Trimethoprim/sulphamethoxazole as a second choice. These drugs are unlikely to be prescribed unless the possibility of *Aeromonas* infection is considered by the attending physician. All infected freshwater wounds should be cultured, and *Aeromonas* considered as a possible pathogen.

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