Necrotizing fasciitis—the hazards of delay

Timothy Stuart Burge FRCS

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SUMMARY

Necrotizing fasciitis was first described in a specific body region by Fournier in 1883[1] and as a more generalized condition by Meleney in 1924[2]. The use of the term 'necrotizing fasciitis' can be attributed to Wilson in 1952[3]. It is perceived as a rare condition, causing potentially devastating morbidity and frequent mortality[4]. Prompt surgical management is generally accepted as the mainstay of treatment[4,5]. This report illustrates the relationship between delay in definitive treatment and morbidity. Management options are also reviewed.

PATIENTS

During the period 1988–1993 the South-East Scotland plastic surgery unit was involved in the management of 12 cases of necrotizing fasciitis. In eight cases the unit was involved in reconstruction only, in four there was also participation in the excision. Three of these cases occurred within a 9 month period and are reported here. All three were young men (aged 24–38). None of the usual risk factors were present. The usual risk factors are:

(i) Significant trauma
(ii) Surgery
(iii) Gastrointestinal malignancy
(iv) Diabetes
(v) Intravenous drug abuse
(vi) Age >50
(vii) Hypertension
(viii) Malnutrition

All three presented with atypical cellulitis and apparently disproportionate pain levels. This is the classical presentation of necrotizing fasciitis[4]. All received a broad spectrum of antibiotics from presentation. In cases 1 and 3 group A β-haemolytic streptococci were cultured. In case 2, although microscopy showed the presence of Gram-positive cocci, nothing was cultured.

Following definitive excision of involved tissue the condition of all three patients improved, this being most dramatic in case 1 and least so in case 3 who was virtually moribund at the time of surgery and who required prolonged post-operative intensive care. Once they were fit to undergo further surgery all three were reconstructed using split skin grafts without any undue problems. Details of presentation, treatment and morbidity are given in Table 1.

DISCUSSION

The bacteriology of necrotizing fasciitis is unclear[6,7], in particular whether synergy is required. Meleney's original description was, like these cases, of a predominantly streptococcal infection[2] (this has been reported elsewhere[8]), only later did he also describe the synergistic form[9]. Necrotizing fasciitis may simply lie towards one end of a spectrum of soft tissue infections ranging from simple cellulitis to myositis requiring amputation[10].

Diagnosis is based on clinical findings. A very sick patient with 'disproportionate' pain and only minor early skin changes is highly suspicious. Microscopy of aspirate of the subcutaneous tissue fluid may demonstrate the presence of organisms and imaging techniques may show infection spreading along tissue planes[5]. Confirmation of the diagnosis is by surgical exploration where the characteristic finding is of grey necrotic fascia, more widespread than the skin changes[4].

Along with resuscitation and general supportive measures three main treatment modalities are suggested for necrotizing fasciitis: antibiotics, hyperbaric oxygen and surgery. Antibiotics have not been shown to halt the infection in necrotizing fasciitis when pre- and post-antibiotic series are compared[11]. It may be that the use of antibiotics and other therapy tempts the surgeon to perform less mutilating but less effective surgery. The mortality from treatment with antibiotics alone has been reported as 100%[5]. Nevertheless, broad spectrum cover is routine and should specifically target anaerobes and streptococci.

Hyperbaric oxygen is strongly advocated by some[12]. Doubts remaining over its use centre on logistic problems and lack of hard evidence as to its benefit[13]. It would seem

South-East Scotland Plastic Survery Unit, West Lothian NHS Trust, St John's Hospital at Howden, Howden Road West, Livingston EH54 6PP, UK

Table 1 **Patient details**

Patient	Delay[1]	Site[2]	'Involved' (%)[3]	Excised (%)[4]	Skin cover[5] (weeks)	Aetiology[6]
1	18 h	Elbow	1	10	2	Paraplegic pressure sores
2	2 days	Perineum	5	20	6	Perianal abscess
3	9 days	Thigh	20	45	12	?Streptococcal sore throat and minor trauma

[1]Delay between presentation to hospital and radical surgery
[2]Initial site of infection
[3]Percentage of body surface area involved on preoperative clinical assessment
[4]Percentage of body surface area excised to achieve control
[5]Time taken to restore skin cover after debridement
[6]Presumed aetiology

reasonable to use it if readily available but not to delay definitive surgery to allow interhospital transfer.

Surgery remains the core of treatment[2,4–6,8,9,13,14]. While occasional reports still advocate incisional surgery[15] (as advocated initially by Meleney[2]) larger series have demonstrated that radical excisional surgery improves survival, albeit at the cost of a greater final deformity[4–6,8,9,14]. The limits of surgery may be guided by microscopy but are essentially decided clinically. The aim is to perform definitive surgery at the first operation, clearing the affected tissue completely. In experienced centres when there is no retroperitoneal disease and treatment need not be delayed because of other conditions, early aggressive surgery and antibiotics can yield mortality rates as low as 0–7%[5,14]. This compares favourably with the 15% reported for surgery with adjunctive hyperbaric oxygen[16]. Mortalities of 30–60% are quoted where these conditions are not met[17,18].

CONCLUSION

'Be bloody, bold and resolute' (Shakespeare, *Macbeth*)

The diagnosis of necrotizing fasciitis is essentially clinical and the treatment primarily early radical surgical excision. These measures can lead to a very low mortality.

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