Necrotising Fasciitis of the Leg as a Complication of Ischiorectal Abscess

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SUMMARY: This case report describes the rare complication of necrotising fasciitis of the right thigh and calf after drainage of an ischiorectal abscess. The important early symptoms and signs of this life threatening infection, and the need for urgent treatment with aggressive surgical debridement and broad spectrum antibiotics, are emphasised in order to facilitate early recognition and prompt initiation of the appropriate therapy in future cases.

Case History

A 35-year-old otherwise healthy married male soldier was admitted as an emergency to the Surgical Department of the British Military Hospital Munster, with severe anal pain.

Examination under anaesthetic revealed normal bowel mucosa to 25cm, and a large boggy mass extending around the lower rectum and anal canal. Incisions were made into this, draining copious amounts of pus, establishing the diagnosis of a horseshoe-type high intersphincteric ischiorectal abscess. A pure growth of *Bacteroides* was cultured. The patient initially made a good recovery, though his temperature remained elevated.

On the third post-operative evening, he complained of pain over the lateral aspect of the right popliteal fossa, preventing him from walking or straightening his knee. On examination he was tender over a localised region around the insertion of biceps femoris onto the head of the fibula, where there was slight swelling and redness. This was at first thought to be a sprain. By the morning there was tenderness and swelling over the whole popliteal fossa. An abscess was suspected and he was taken to theatre.

Under general anaesthetic (GA), the patient was found to have subcutaneous emphysema in the popliteal fossa. A long postero-lateral calf incision was made, releasing large amounts of green pus, containing bubbles of foul smelling gas. The pus was dissecting along the fascial planes around gastrocnemius, with extensive necrosis of fascia, but with healthy muscle and subcutaneous fat. This established the diagnosis of necrotising fasciitis. The pus was washed out with warm saline and hydrogen peroxide, and all necrotic fascia was excised. The wound was left open and dressed with gauze, cotton wool and crepe bandages. The patient was commenced on high dose intravenous metronidazole, cefuroxime and benzylpenicillin. Pus culture grew *Bacteroides fragilis* and anaerobic Streptococci, sensitive to the above antibiotics, which were therefore continued.

By the next day the patient had developed further

inflammation and crepitus proximally up to the buttock and distally as far as the ankle. Under GA, the incision was therefore extended in the midline from the buttock down to the heel, being curved transversely across the back of the knee. Widespread necrotising fasciitis was found throughout the posterior compartment of the thigh and calf. Pus had tracked down alongside the sciatic nerve from within the pelvis through the greater sciatic foramen, down to the popliteal fossa, and then along the fascial planes around gastrocnemius and soleus as far as the tendo Achilles. All necrotic fascia was therefore excised, and the wound was irrigated with hydrogen peroxide and saline. Yeates drains were placed alongside the sciatic nerve, and the wound dressed before.

A post-operative ultrasound showed no evidence of pelvic abscess, and rectal examination was normal. The patient's health improved markedly thereafter and a further change of dressing and wound toilet under GA revealed little residual pus. He then developed inflammation in the anterior aspect of his right thigh. Under GA, the right femoral triangle was incised. This revealed pus alongside the femoral nerve and vessels, extending from the inguinal ligament down to the adductor hiatus, where it communicated with the popliteal fossa. This pus was washed out. Porto-Vac drains were laid alongside the sciatic and femoral nerves, and connected to infusion tubing. The wounds were then dressed, and a slow continuous irrigation with Betadine (povidone-iodine) and Normal Saline, mixed in a 1:1 ratio within a Polyfusor Normal Saline 1 litre container, was commenced at the rate of 1 litre every 24-36 hours into each drain.

The patient subsequently underwent daily or alternate daily wound toilet under GA. Betadine irrigation was continued for 10 days; intravenous antibiotic therapy was maintained for 14 days, followed by oral antibiotics for 12 days. All wounds were closed secondarily in stages without skin grafting (Figs 1, 2). The patient underwent his last, 16th GA exactly one month after his first. During this time he required transfusion of six units of blood as well as receiving intravenous human albumin solution, a high protein diet and ferrous sulphate. He re-

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Fig 1. Healed Back of Leg.

maintained an inpatient for 38 days; he then received outpatient physiotherapy for six weeks, followed by a month's intensive inpatient physiotherapy at the Army Rehabilitation Unit at Soest.

At final review 15 months after admission, he was left with a barely perceptible weakness of tibialis anterior, resulting in a minimal equinus deformity. Despite this, he had regained his normal fitness and had passed his Basic Fitness Test and Combat Fitness Test in boots.

Discussion

Necrotising fasciitis is defined as "an uncommon infection characterised by extensive necrosis of the deep fascia, which is usually rapidly progressive and often fatal. The necrosis is primarily limited to the fascial planes, the deep fascia being ragged, grey and malodorous, with runnels of liquefied fat, necrotic fascia and pus extending out beneath apparently normal skin" (1).

There are several synonyms for this infection, namely Meleney's Haemolytic Streptococcal Gangrene (2), Streptococcal Necrotising Fasciitis, gangrenous

Fig 2. Healed Anterior Thigh.

erysipelas, necrotising erysipelas, and hospital gangrene. Haemolytic and anaerobic Streptococci are the usual causative organisms, closely followed by Coliforms and *Bacteroides*.

There are two main methods by which infection can spread from the abdomen or pelvis into the thigh (3). The first is by direct soft tissue invasion, which would cause obvious perineal erythema, induration and blistering. The other method of spread is via the natural openings in the pelvic wall: 1) along the psoas muscle within its fascial sheath, 2) through the femoral canal beneath the inguinal ligament, 3) via the obturator foramen, and 4) through the greater sciatic foramen along the sciatic nerve into the buttock and thigh posteriorly. This was the route in this patient, and has only rarely been reported (4-7).

This patient is the first recorded in whom necrotising fasciitis has spread from an ischio-rectal abscess through the greater sciatic foramen down to the popliteal fossa and ankle, and then tracked anteriorly through the adductor hiatus back to the inguinal ligament alongside the femoral vessels, and moreover has survived.

The presenting symptom in this patient was severe pain in the popliteal fossa, with inability to weight bear, associated initially with a very localised region of tenderness, redness and slight swelling, and an elevated temperature. It has been stressed elsewhere (1, 3, 8) that any patient who complains of leg pain (other than calf pain) after an intra-abdominal or pelvic surgical procedure, especially for sepsis, should be viewed with suspicion, for this has been recognised as a mode of presentation of necrotising fasciitis spreading down from above.

Necrotising fasciitis often presents at a site distant from the source of infection, being separated therefrom by healthy skin, and this can be a diagnostic pitfall. Therefore, once necrotising fasciitis is recognised at any site one must seriously consider incising extensively through healthy skin down to deep fascia in order to trace the infection to its source.

Conclusion

Delay can be fatal. The principles of treatment (9-12) are early recognition of the condition, aided by awareness of the possibility of this complication following surgery for sepsis, aggressive surgical debridement and broad spectrum antibiotic therapy. Under GA, radical excision of all necrotic tissue is essential, with healthy skin being incised to exclude underlying necrosis, and if necessary excising overlying skin and subcutaneous tissues. This should be followed by mandatory re-exploration at 24 hours, wound toilet with saline solution, hydrogen peroxide and povidone iodine, and further changes of dressings as required, with plastic surgery if necessary to achieve skin cover once infection is fully controlled. High dose intravenous antibiotic therapy should ideally consist of a combination of metronidazole, benzylpenicillin and a cephalosporin or gentamicin. Betadine irrigation as described was successful in this patient and we recommend it.

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