

*Editorial***Editorial Note on Necrotizing fasciitis**

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**DESCRIPTION**

Necrotizing fasciitis (NF), also known as flesh-eating disease, is an infection that results in the death of parts of the body's soft tissue. It is a severe disease of sudden onset that spreads rapidly. Symptoms usually include red or purple skin in the affected area, severe pain, fever, and vomiting. The most commonly affected areas are the limbs and perineum.

**SIGNS AND SYMPTOMS**

Symptoms may include fever, swelling, and complaint of excessive pain. The initial skin changes are similar to cellulitis or abscess, thus making the diagnosis at early stages difficult. Hardening of the skin and soft tissue and swelling beyond the area of skin changes are commonly present in those with early necrotizing changes. The redness and swelling usually blend into surrounding normal tissues. The overlying skin may appear shiny and tense. Other signs which are more suggestive of necrotizing changes (but present in later stages in 7 to 44% of the cases) are: formation of bullae, bleeding into the skin which is present before skin necrosis (skin turning from red to purple and black due to thrombosis of blood vessels), presence of gas in tissues, and reduced or absent sensation over the skin (due to the necrosis of the underlying nerves). Rapid progression to shock despite antibiotic therapy is another indication of necrotizing fasciitis. Necrotizing changes affecting the groin are known as Fournier gangrene.

**CAUSES**

Necrotizing fasciitis can occur at any part of the body, but it is more commonly seen at the extremities, perineum, and genitals. Only a few of such cases arise from the chest and abdomen. Trauma is the usual cause of the infection, such as from intravenous drug injection, insulin injection, animal and insect bites, catheter insertion over the skin, or a fistula connecting skin to the internal body organs. Skin infections such

as abscess and ulcers can also complicate necrotizing fasciitis. Spreading of infection through blood has been suggested for those with streptococcal pharyngitis. For infection of the perineum and genitals (Fournier gangrene), trauma, surgery, urinary tract infection, stones, and Bartholin gland abscess are the usual causes.

**DIAGNOSIS**

Early diagnosis is difficult, as the disease often looks early on like a simple superficial skin infection. While a number of laboratory and imaging modalities can raise the suspicion for necrotizing fasciitis, none can rule it out. The gold standard for diagnosis is a surgical exploration in a setting of high suspicion. When in doubt, a small incision can be made into the affected tissue, and if a finger easily separates the tissue along the fascial plane, the diagnosis is confirmed and an extensive debridement should be performed.

**Scoring system**

A white blood cell count greater than 15,000 cells/mm<sup>3</sup> and serum sodium level less than 135 mmol/l have a sensitivity of 90% in detecting the necrotizing soft tissue infection.

**TREATMENT**

Surgical debridement (cutting away affected tissue) is the mainstay of treatment for necrotizing fasciitis. Early medical treatment is often presumptive; thus, antibiotics should be started as soon as this condition is suspected. Tissue cultures (rather than wound swabs) are taken to determine appropriate antibiotic coverage, and antibiotics may be changed in light of results. Besides blood pressure control and hydration, support should be initiated for those with unstable vital signs and low urine output.

**Antibiotics**

Empiric antibiotics are usually initiated as soon as the diagnosis of NSTI has been made, and then later changed

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to culture-guided antibiotic therapy. In the case of NSTIs, empiric antibiotics are broad-spectrum, covering gram-positive (including MRSA), gram-negative, and anaerobic bacteria.

While studies have compared moxifloxacin (a fluoroquinolone) and amoxicillin-clavulanate (a penicillin) and evaluated appropriate duration of treatment (varying from 7 to 21 days), no definitive conclusions on the efficacy of treatment, ideal duration of treatment, or the adverse effects could be made due to poor-quality evidence.

#### **Add on therapy**

- **Hyperbaric oxygen:** While human and animal studies have shown that high oxygen tension in tissues helps to reduce edema, stimulate fibroblast growth, increase the killing ability of white blood cells, inhibit bacterial toxin release, and increase antibiotic efficacy, no high-quality trials have been shown to support or refute the use of hyperbaric oxygen therapy in

patients with NSTIs.

- **Intravenous immunoglobulin (IVIG):** No clear difference between using IVIG and placebo has been shown in the treatment of NSTIs, and one study showed serious adverse effects with IVIG use, including acute kidney injury, allergic reactions, aseptic meningitis syndrome, haemolytic anaemia, thrombi, and transmissible agents.

- **AB103:** One study assessed the efficacy of a new type of treatment that affects the immune response, called AB103. The study showed no difference in mortality with use of this therapy, but it is difficult to draw definitive conclusions due to low-quality evidence.

- **Supportive therapy:** Supportive therapy, often including intravenous hydration, wound care, anticoagulants to prevent thromboembolic events, pain control, etc. should always be provided to patients when appropriate.