

Necrotizing Fasciitis Pathophysiology and Characteristics



PLAY PICMONIC

Bacterial Infection of Muscle Fascia and Subcutaneous Fat

[Bacteria on fashion sign and sub-q-tip-fat](#)

Necrotizing fasciitis is characterized by a bacterial infection affecting specifically the muscle fascia and subcutaneous fat. Necrotizing skin and soft tissue infections in general tend to affect these tissues overlying muscle tissue, as they have relatively poor blood supply in comparison and are therefore less accessible to the host immune response.

Polymicrobial or Monomicrobial

[Poly-parrot and monocle](#)

Cases of necrotizing fasciitis can be categorized as polymicrobial, involving multiple bacterial species, or monomicrobial, involving only one.

Polymicrobial: Anaerobe + Gram Negative Enterobacteriaceae

[Ant-robe and gram negative devil with polly parrot](#)

Polymicrobial necrotizing fasciitis is commonly characterized as being caused by a combination of anaerobic bacteria (Bacteroides, Clostridium, Peptostreptococcus) in combination with gram negative Enterobacteriaceae (E coli, Proteus, Klebsiella, Enterobacter). Obligate aerobes (eg., Pseudomonas) are rarely isolated in polymicrobial necrotizing fasciitis.

Monomicrobial: Group A Streptococcus or Staph Aureus

[Stripper-apple pie with staff-oreos and monocle](#)

Monomicrobial necrotizing fasciitis is most commonly caused by group A Streptococcus (Streptococcus pyogenes) followed by Staph aureus. Compared to polymicrobial necrotizing fasciitis, monomicrobial cases tend to be seen in younger patients often with no comorbidities. These cases may result from hematogenous translocation of group A strep from the throat to a site of blunt trauma or muscle strain.

Clinical Manifestations

Edema Extending Beyond Erythema

[Edamames bigger than erythematous hands and feet](#)

One of the hallmark characteristics of necrotizing fasciitis is edema that extends beyond the erythematous edges of an erythematous rash. This is because the infection tends to spread within a fascial plane (ie., within the same layer) more rapidly than towards the superficial skin. For the same reason, skin findings may not be obvious until well into the disease course.

Crepitus

Carpenters

Crepitus in the context of necrotizing fasciitis is a result of gas released by certain bacteria within the soft tissue. It can be appreciated on exam as a creaking or crackling sensation when the soft tissue is pressed firmly.

Pain Out of Proportion (POOP)

dog pooping

Many patients with necrotizing fasciitis may present with pain out of proportion to exam findings. In other words, while the cutaneous manifestations may appear mild, the patient is experiencing excruciating pain. This is due to the fact that the disease process tends to affect and spread along the deeper tissues, and therefore superficial findings may not be evident until well into the disease process. Note that as the disease progresses further, anesthesia over the affected area may develop, as small blood vessels thrombose and superficial nerves are destroyed.

Anesthesia Over Affected Area (Late Finding)

A-nest and late-clock

As the disease progresses, the pain out of proportion seen on exam may progress to anesthesia of the affected area. This is a result of thrombosis of small blood vessels and destruction of superficial nerves.