

Medical Perspective of Necrotizing Fasciitis

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ABSTRACT

Necrotizing fasciitis (NF) it is a disease condition caused by flesh eating bacteria named Streptococcus. The target organ to escalate the disease by this bacteria is skin. The clinical condition can be easily confused with cellulitis. The overlying skin tissues are initially unaffected, quiet potentially delaying diagnosis and surgical intervention.

KEYWORDS: *Necrotizing fasciitis (NF), disease, condition, cellulitis, skin*

INTRODUCTION

Necrotizing fasciitis (NF) of the skin is a very rare and potentially lethal infection which tends to progress rapidly through the fascial planes. Infection usually expands along the muscle fascia due to its poor blood supply; therefore, the skin appears quiet unaffected at the beginning. This characteristic makes this type of infection very much difficult to diagnose without surgical interference. Due to its rarity and the very low numbers, there is not much data about NF in the literature, which makes it a challenging disease to mainly diagnose and treat. Moreover, once diagnosed, there are no specific indicators of how to categorize these patients and predict mortality to tailor the treatments and then initiate earlier ICU critical care. (Hsiao et al.,2008).

The Necrotizing fasciitis is a subset of aggressive skin and soft tissue infections that cause muscle fascia and the subcutaneous tissue necrosis. The infection typically travels along the fascial plane, which has a much poor blood supply. The overlying tissues are initially unaffected, quiet potentially delaying diagnosis and surgical intervention. The infectious

process can rapidly escalate, causing infection of the fascia and perifascial planes and secondary infection of the overlying and the underlying skin, soft tissue, and muscle. This activity reviews the evaluation, treatment, and prognosis of the necrotizing fasciitis and highlights the role of an interprofessional teams in evaluating and mainly improving care for patients with this condition (Wong et al.,2003).

HISTORY

The Necrotizing soft-tissue infection (NSTI) was first described by Hippocrates circa 500 BC, when he wrote, “Many were attacked by the erysipelas all over the human body when the exciting cause was a trivial accident . . . the flesh, sinews, and bones fell away in large quantities . . . there were many deaths.”¹ Despite many advances in research in our understanding of this disease and the great improvements in medical care, the mortality associated with the NSTI has not changed in the last 30 years and remains 25% to 35% (Bonne et al.,2017). The Mortality is directly proportional to time to intervention. In addition, the prevalence of this disease is such that the average practitioner will see only one or the two cases in his or her career. Physicians cannot be sufficiently familiar with the state of NSTI to proceed rapidly with accurate diagnosis and the necessary management. The purpose of many research in this zone is to provide an evidence-based review of the microbiology, pathophysiology, diagnosis, and treatment of NSTI. Because there are no adequately powered, randomized, and also blinded studies, the recommendations are based on retrospective and non blinded study data available. NSTI was delineated as “hospital gangrene” by British Naval surgeons in the 18th and 19th century (Ballesteros-Betancourt et al.,2017). Pathology, it is a broad field of study of microorganisms, which causes diseases (Dr. S. Sreeremya, 2023). There are many potent pathogens (Dr. S. Sreeremya, 2019), Mycobacterium species is on among them (S.Sreeremya, 2018).

Characteristics of Disease

Locally NF, initially presents with the erythema and warmth, but rapid increase in tenderness and edema exceeds the erythematous borders. Edema generates tense skin, referred as “wooden” during palpation. Progression of the infection manifests with skin vesicles, bullae, ecchymosis, paresthesia/anesthesia. The Subcutaneous emphysema and crepitus are present in the gas-producing type of NF, while their absence does not rule out the disease(Yaşar et al.,2017) .The Pathognomonic of NF is the discrepancy between local manifestations and the

pain severity, with the latter being significantly severe; this is also known as a warning signs. In some cases, in absence of the local signs, systemic septic shock signs develop progressively. This should always be proceeded with empiric therapy . Agonizing pain in cases of the NF was first delineated by scientist .In some cases of NF hypocalcemia is noted from bacterial lipases action over subcutaneous fat, and the hyperbilirubinemia from bacterial hemolysins . Pathology , it is a broad field of study of microorganisms which causes diseases(Dr. S.Sreeremya,2023).There are many potent pathogens(Dr. S.Sreeremya,2019), Mycobacterium species is on among them(S.Sreeremya,2018).



Figure: 1

Clinical Manifestations

Lymphangitis is rarely allied with NF, usually from the primary insult-affecting fascia. 4 NF in early stages infection tends to spread in the horizontal plane (fascial spread), then later stages, vertical spread happens by affecting the rectal sheath, muscles and also the integuments. Because of the nonspecific signs and symptoms the initial phase of the NF is mistaken for cellulitis or wound hematoma (Fais et al.,2018). Also the Clinicians as well as diagnostic practitioners must be able to quickly distinct cellulitis, which can be managed with antimicrobials, from the NF that requires surgical intervention, where patients experience severe pain, and can propagate easily to the tissue necrosis and hemodynamical instability . Histopathologic sections of superficial/the deep fascial necrosis have shown small/ medium sized vessels occluded by thrombi and the necrotic changes in the specific eccrine glands and ducts too. Treatment delay or the inadequate dosage/medication of choice could lead to extension of necrotic process to the muscles, resulting in the myositis or myonecrosis (Fernando et al.,2019). The correlation between the histopathologic findings of

debrided tissue in patients with NF and the clinical outcomes was adopted as a prognostic tool by few researchers. As subcutaneous tissue vessels get obstructed by the thrombi, and superficial nerves fibers get destroyed, pain is reduced manifesting with the anesthesia. Bacterial overgrowth is supported by compromise in skin or the mucosal integrity, hyperglycemia and systemic immunosuppression. The Tissue necrosis and spread of causative agents, is facilitated by their enzymes and by toxins. Progression of tissue necrosis is as fast as 1 inch per hour. Impaired blood flow to the fascial layers beneath the integumentary system, makes them prone of hypoxic events, respectively necrosis (Khalid et al.,2018). In a retrospective study on patients with the NF cutaneous signs changes were recorded while the disease evolved, from day 0 to day 4. At the initial examination patients had erythema, warmth, also tenderness, induration, edema, and as late signs with elapsed time (day 4) patients developed blisters, the anesthesia, necrosis and skin crepitus, multi-organ failure. Our case is characterized by the monomicrobial NF. In two separate occasions were isolated two different causative agents (Erichsen Andersson et al., 2018). Researchers used vaginal swab and hemoculture isolated Group B Streptococcus Agalactiae. This is mainly thought to be favoured by the emergency condition of cesarean delivery, with the dilated cervix and ruptured membranes. In our case, a positive wound culture for the Group B Streptococcus agalactiae resulted in the circumstances of a scheduled C-section, closed cervix and intact membranes. The Post-operative NSAID has been reported as a risk factor. In our case, the patient was administered the NSAID in the immediate postoperative period, besides that, this patients had a few other preoperative risk factors. The mechanism through which NSAID favor progression of the NF is thought to be delay of diagnosis by masking signs and symptoms, by inhibiting chemotaxis, the phagocytosis or by decreasing lymphocyte response(Heijkoop et al.,2019).

Risk for Necrotizing Fasciitis

In Most cases occur randomly and are not linked to similar infections in others. The most common way of getting the necrotizing fasciitis is when the bacteria enter the body through a break in the skin, like a cut, the scrape, burn, insect bite, or puncture wound. Most people who get the necrotizing fasciitis have other health problems that may lower their body's ability to fight infections. Some of these conditions include diabetes, kidney disease, cancer, or other chronic health conditions that mainly weaken the body's immune system(Lange et al.,2018).

CONCLUSION

This paper garners the information regarding the NF. The history, characteristics of disease, peculiar features of escalation of disease like initially presents with the erythema and also warmth, but there is rapid elation in tenderness and edema exceeds the erythematous borders.

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