

A study of predisposing factors and anatomical location in necrotizing fasciitis patients from the rural population of Himachal Pradesh

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Abstract

Background: Necrotizing fasciitis (NF) is a rare but life-threatening soft tissue infection that requires immediate surgical intervention. The condition is fast progressing and, if not treated swiftly, can result in substantial morbidity or even death. This study was aimed to investigate the different predisposing variables that are frequently present and to examine the various anatomical locations.

Methods: The institutional scientific review protocol committee and the institutional ethical review protocol committee both approved the protocol. Additionally, the patient's written informed consent was acquired. From June 2018 to May 2019, all patients admitted to the department of general surgery at Dr. Rajendra Prasad Govt. Medical College & Hospital, Tanda with a diagnosis of necrotizing fasciitis were included in the study. Necrotizing fasciitis (NF) is an infrequent but life-threatening infection of the soft tissues that requires prompt surgical intervention.

Results: Out of 60 patients, 43 acquired necrotizing fasciitis as a result of trauma, carbuncle, or perianal abscess, whereas 17 developed it spontaneously. The lower leg was the most frequently afflicted body area, accounting for 33 (55 %) of all cases, followed by the scrotum and perineal region, accounting for 18 (30 %) of all cases.

Conclusions: From our study, we conclude that trauma in any form acts as a major precipitant factor for initiating the disease process. The lower limb was the most commonly affected part of the body followed by the scrotum & perineal region.

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I. Introduction

Necrotizing fasciitis is uncommon, yet it is a very aggressive and deadly illness. Necrotizing fasciitis is described as an infection of any of the skin and soft tissue layers, including the subcutaneous layer, the superficial fascia, and the deep fascia, that is accompanied with necrotizing changes. Jones initially reported these illnesses in 1871, coining the name "hospital gangrene" [1]. In 1951, Wilson coined the term "necrotizing fasciitis" to describe some of these infections [2].

In its early stages, necrotizing fasciitis is clinically indistinguishable from other severe soft tissue infections such as cellulitis and erysipelas, which manifest with pain, tenderness, and a rise in skin temperature. The development of blisters or bullae is a key diagnostic signal for the start of severe skin ischemia, which is classified as stage 2 necrotizing fasciitis. Stage 3 necrotizing fasciitis begins with the appearance of necrosis in the tissue and is marked by more usual signs and symptoms such as hemorrhagic bullae, crepitus, skin anaesthesia, and frank skin gangrene. [3]

As NF is a highly aggressive and lethal disease, the early prediction may lead to a better outcome and less morbidity. Hence, we studied the predisposing factors and anatomical site associated with necrotizing fasciitis.

II. Method

The institutional scientific review protocol committee and the institutional ethical review protocol committee both approved the protocol. Additionally, the patient's written informed consent was acquired. From June 2018 to May 2019, all patients admitted to the department of general surgery at Dr.Rajendra Prasad Govt. Medical College & Hospital, Tanda with a diagnosis of necrotizing fasciitis were included in the study.

The diagnosis of necrotizing fasciitis was made by intense pain, swelling, erythema, bluish or purplish discoloration, blisters, bullae, necrosis of skin and multiple patches expanded to the large area of gangrenous skin.

Depending on the area of involvement, these local findings were supported up by various symptoms of systemic illness. This condition manifests itself through tachycardia, fever, extreme thirst, dehydration, weakness, and disorientation. Vital signs such as pulse, blood pressure, and temperature were recorded on the day of admission. Following that, a comprehensive physical examination was conducted. Predisposing variables such as blunt or penetrating trauma, perianal abscess, carbuncle, or furuncle were studied.

III. Results

Predisposing factors

Out of 60 patients, 43 patients had necrotizing fasciitis following trauma, carbuncle, perianal abscess, whereas 17 patients developed necrotizing fasciitis spontaneously. These predisposing factors in 43 patients were blunt trauma in 15 (25%) patients and penetrating injury in 11 (18.3%) patients, carbuncle in 6 (10%), perianal abscess and furuncle were present in 6 (10%), 5(6.7%) patients respectively as shown in figure 1 and table 1.

Figure 1: Predisposing factors

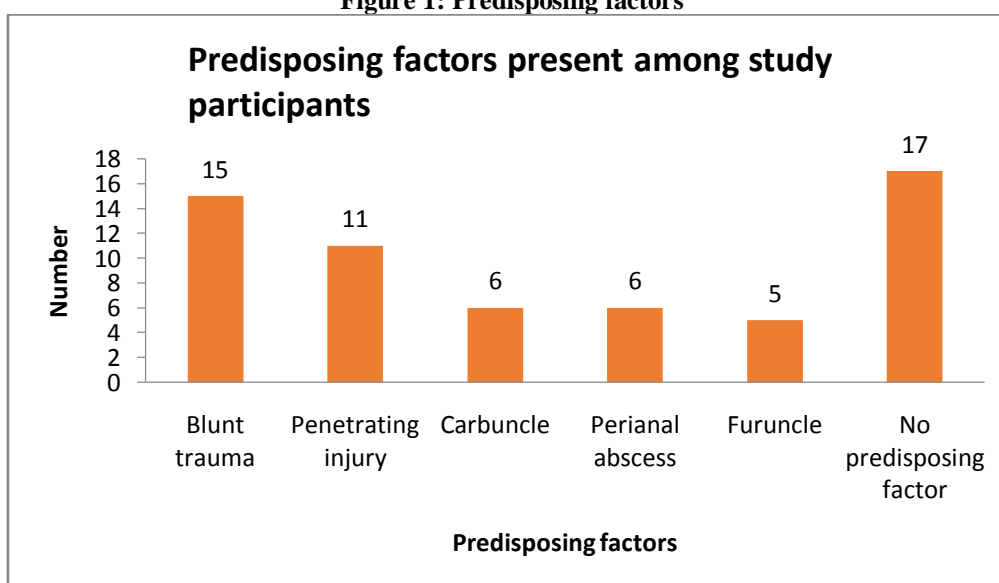


Table 1: Predisposing factors (n=60)

Predisposing factors	Number	Percentage
Blunt trauma	15	25
Penetrating injury	11	18.3
Carbuncle	6	10
Perianal abscess	6	10
Furuncle	5	8.3
No predisposing factor	17	28.3
Total	60	100

(n= total patient in the study)

Anatomical location

The lower limb was the most commonly affected part of the body with 33 (55%) cases followed by the scrotum & perineal region in 18(30%) cases. There were 8 (13.3%) cases of the upper limb and 1(1.7%) case of the chest and abdomen.

Figure 2: Anatomical Location

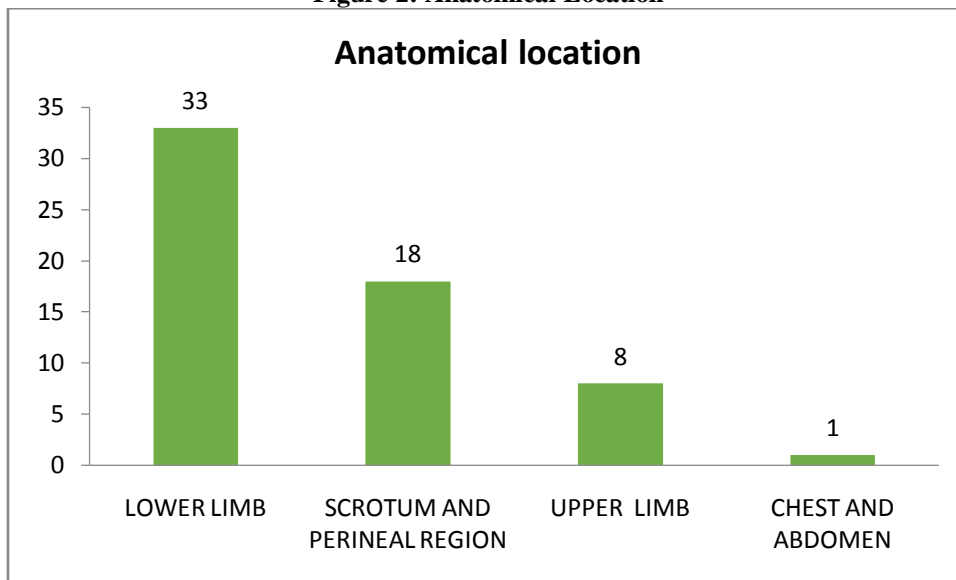


Table 2: Anatomical Location (n=60)

Anatomical Location	Number	Percentage
Lower Limb	33	55
Scrotum And Perineal Region	18	30
Upper Limb	8	13.3
Chest And Abdomen	1	1.7
Total	60	100

(n= total patient in the study)



Figure 3: Figure showing necrotizing fasciitis in different anatomical locations

A) NF of ankle joint and foot B) NF of leg and foot C) NF of knee joint D) NF of of perineum and vaginal region and E) Fournier's gangrene

IV. Discussion

The majority of cases of necrotizing fasciitis occurred as a result of a minor injury caused by trauma, which might be blunt or penetrating. Inadequate wound care following minor trauma is the primary cause of necrotizing fasciitis [4]. Necrotizing fasciitis was the most common complication of blunt or penetrating trauma, accounting for 43.3 % in our research, followed by carbuncles (10%), perianal abscesses (10%), and furuncles (8.3 %). Trauma was found to be a predisposing factor in a range of studies, ranging from 10.6 % to 78 % [5-7]. The foreign body that may become lodged or the deep inoculation caused by trauma, thorn prick, and other causes creates an ideal incubator-like environment for the organisms to flourish. When combined with impaired host defence caused by alcoholism or diabetes, this creates a fulminant local infection that results in necrotizing fasciitis. [5].

The lower limb was shown to be the most frequently affected site of necrotizing fasciitis in 55% of patients, followed by the scrotal and perianal area in 30% and the upper limb in 13.3%. The anterior abdominal wall was the least prevalent location of necrotizing fasciitis, accounting for 1.7 % of cases. This was consistent with the findings of Jeyaraman et al, who reported that the lower extremities was implicated in 77% of cases, followed by the perineum in 20% of cases [8]. Additionally, Avalahalli et al. observed that the lower limb was the most prevalent location of NSTI in 86 % of patients [9]. According to a study conducted by David Eliot et al, necrotizing fasciitis most frequently occurs in the perineum [10]. This disparity might be attributed to differences in work habits, more safety precautions in the west, and a lack of cleanliness among the study group.

V. Conclusion

Necrotizing fasciitis is a very aggressive and deadly illness. It may spread swiftly and wreak havoc on delicate tissues. As a result of the foregoing study, we infer that trauma in any form has a significant role in beginning the illness process. Lower limbs were the most often afflicted body area, followed by the scrotum and perineal region.

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