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Case Report

Necrotizing fasciitis with prior leprosy: a case report

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ABSTRACT

Necrotizing fasciitis (NF) is a life-threatening soft tissue infection with a high misdiagnosis rate. Here, we present the case of NF with hypoesthesia due to prior leprosy in a limited resource area. Laboratory risk indicator for NF (LRINEC) score was used to determine the diagnosis of NF. Resuscitation and broad-spectrum antibiotic were initiated, followed by surgical debridement due to lack of wound improvement and skin graft to cover the wound was done. This case report highlights the usage of LRINEC score to reduce misdiagnosis, ensure early diagnosis, and improve patient management in NF with masking effect.

Keywords: Necrotizing fasciitis, Leprosy, Laboratory risk Indicator for necrotizing fasciitis, Early diagnosis, Delayed diagnosis

INTRODUCTION

Necrotizing fasciitis (NF) is a rare and life-threatening progressive infectious disease involving the skin, subcutaneous tissue, and extending to fascial planes.[1] Early recognition of symptoms in this disease is crucial to reduce mortality and morbidity caused by this disease.[2] Diagnosis in the early stages of this disease is challenging due to its rarity and paucity of early pathognomonic signs with misdiagnosis occurs in about 71.4% of cases.[3] Laboratory risk indicator for NF (LRINEC) score is a clinical tool based on six common serum parameters at the time of presentation with a higher risk of NF in score more than 5.[4] High specificity of LRINEC score renders it suitable to diagnose NF promptly, especially in limited resources.[5] Challenges in the diagnosis of NF is enhanced on patients with comorbidities.[6,7] One of the rare comorbidities ever reported in NF is leprosy.[8] Leprosy enhances diagnostic challenges in NF due to its hypoesthesia clinical features that mask severe localized pain, a characteristic feature of NF.[7] We report a case of NF with the history of prior leprosy with marked hypoesthesia in the limited resources.

CASE REPORT

A 46 years old male was admitted to the emergency department due to purple-black blisters on the right forearm, which had been present for five days. Lesion initially presented as an erythematous macular rash with surrounding edema on the right forearm extended to the right hand, then evolved to yellow-brown blisters and then to purple-black blisters. The patient also complained of fever with mild pain (visual analog scale 4 out of 10 at the admission) on the right forearm. The patient had a history of a small wound on the right elbow due to scratching a few weeks before admission and also leprosy 20 years before admission with treatment completion status with marked permanent hypoesthesia as a complication. History of prior diseases, such as diabetes mellitus and kidney diseases were denied.

At presentation, he was ill-appearing and in pain. Blood pressure was 77/54 mmHg, heart rate was 126 beats/min, respiratory rate was 22 breaths/min, and the temperature was 38.1°C. Examination of the right forearm revealed diffuse erythematous plaque with surrounding edema,

warm in touch without crepitation. There were multiple irregular hemorrhagic-pus tense bullae with various sizes on top of the erythematous plaque (Figure 1). The patient was immediately given Ringer's lactate solution (RL) IV bolus.

Figure 1: The aspect of the lesion on the right forearm at initial presentation.

On initial laboratory investigation showed high leukocyte count (68,700/mm3) and erythrocyte sedimentation rate (ESR) (42 mm/hour) and low blood sugar level (59 mg/dL) and hemoglobin (11.6 g/dL). Electrolyte and liver function tests (SGOT and SGPT) were unremarkable. A forearm-hand radiograph was not taken due to limitations. The patient was immediately given a dextrose 40% solution followed by D10% for fluid maintenance. The patient was admitted into the ward after stabilization with the diagnosis of sepsis due to suspected soft tissue infection caused by bacterial.

On the next day, intravenous meropenem and metronidazole were initiated after bullae aspiration and wound swab from the wound for aerobic culture was taken. The daily dressing was done on the lesion with intravenous fluids and analgesics as needed. Further laboratory investigation were taken with the results of renal function was impaired (creatinine 1.05 mg/dl and serum urea 116.3 mg/l), high C-reactive protein (CRP) (225.92 mg/l) and bilirubin (total bilirubin 14.36 mg/dl, direct bilirubin 12.6 mg/dl, and indirect bilirubin (1.76 mg/dl) with low serum albumin (2.25 g/dl) and globulin (1.85 g/dl). The patient's LRINEC score was 7 out of 13, thus the diagnosis of NF was confirmed. Aerobic culture results were reported on the sixth day, but there was no bacterial growth. Anaerobic culture was not taken due to limitations.

The patient underwent surgical debridement on the eight-day of admission due to lack of wound improvement and wound swab from the wound for aerobic culture was taken. The patient's wound was dressed with topical gentamicin after debridement. The patient's condition was improved after debridement and renal function tests, liver function tests, and globulin were within normal limits on the 11th day of admission, but with declined hemoglobin level (7.1 g/dl) and leukocyte count was still in 15,000/mm^3. The patient then underwent blood transfusions and was discharged on the 14th day. The wound started to granulate well on the 14th day post debridement (Figure 2).

Figure 2: The aspect of lesion 14 days after surgical debridement.

Figure 3: The aspect of lesion a month after debridement, before skin graft surgery.

Figure 4: The aspect of the lesion right after skin graft surgery.

Figure 4: The aspect of forearm 14 days after skin graft surgery.

One month after discharged, the wound started to granulate well (Figure 3) and a split-thickness skin graft from the patient's thigh was used to improve wound healing (Figure 4). On follow-up, 14th day after skin graft, the patient's skin graft was good (Figure 5) and no further complications were found.

DISCUSSION

NF was mainly seen in the lower extremities, abdomen, and perineum.[9] Our patient had NF in the upper extremity, uncommon area for NF to occur.[10] NF is hard to diagnose due to the similarity of symptoms between this disease with other skin diseases, such as erysipelas and cellulitis.[11] Pain out of proportion to the edema and erythema, extending beyond areas of skin involvement is the most consistent feature of early NF.[3] However, this consistent feature is not apparent in our patient due to marked hypoesthesia. This condition caused the delay in seeking the treatment in our patient, thus causing the disease progress until hemorrhagic bullae appeared. This masking effect should be recognized as one of the diagnostic challenges in a patient with leprosy.

Table 1: LRINEC score.

Laboratory parameter	Score
C-reactive protein (mg/L)	
<150	0
≥150	4
Leukocyte (per mm^3)	
<15	0
15-25	1
>25	2
Hemoglobin (g/dl)	
>13,5	0
11-13,5	1
<11	2
Sodium (mEq/l)	
≥135	0
<135	2
Serum creatinine (mg/dl)	
≤1,6	0
>1,6	2
Serum glucose (mg/dl)	
≤180	0
>180	1

Whilst the gold standard to confirm the diagnosis of NF is a surgical exploration with microbiological and histopathological analysis imaging with CT scan has superior sensitivity and specificity, but it is also not readily available in all healthcare centers.[5,12] In the limited resources, the LRINEC score (Table 1) is a useful clinical tool to assess the severity and determine the prognosis of the patient especially in our case where prior leprosy causes hypoesthesia that masked clinical features of NF.[13]

The LRINEC scoring can help in predicting septic shock (cut-off point of 5 points with sensitivity 82% and specificity 38%) and mortality (cut-off point of 8 points with sensitivity 81% and specificity 36%) A previous study by Fernando et al reported the accuracy of NF diagnosis with LRINEC scoring of 6 as a cut-off point has a sensitivity of 68.2% and specificity of 84.[8,13] while a cut-off point score of 8 has a sensitivity of 40.8% and specificity of 94.9%.[5] Although a previous study by Goh et al stated that clinical suspicion is superior to laboratory testing or LRINEC score, this cannot be applied in our case due to the masking effect of prior leprosy.[3]

CONCLUSION

This case report highlights the importance of using the LRINEC score as a routine diagnostic tool to increase diagnostic accuracy in difficult NF patients. The routine usage of the LRINEC score is necessary to ensure early diagnosis and improve patient management, especially in limited resources to reduce the mortality and morbidity of NF.

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