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LABORATORY RISK INDICATOR FOR NECROTIZING FASCIITIS (LRINEC) SCORE FOR THE ASSESSMENT OF NECROTIZING FASCIITIS IN HIMALAYAN REGION.

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Abstract

Background: The LRINEC score (laboratory risk indicators for necrotizing fasciitis) was established in 2004 to aid in the differentiation of necrotizing fasciitis from severe soft tissue infections.

Methods: The study included all patients hospitalized to the department of general surgery at Dr. Rajendra Prasad Govt. Medical College & Hospital, Kangra, Tanda, H.P. India with a diagnosis of necrotizing fasciitis for a period of one year, from June 2018 to May 2019. At the time of admission, the patient's hemoglobin, white blood cell count, C-reactive protein, blood glucose level, urea, sodium, potassium and creatinine levels (LIRNEC Score) were calculated.

Results: In all the patients LRINEC Score was > 6. Out of 60 patients, 14(23%) patients had LRINEC Score in between 6 to 7 and 46 (76%) patients had LRINEC score >8.

Conclusion: The LRINEC score of 6 and above suggest NF and therefore aiding in the early recognition of NSTI and its management.

Introduction

Necrotizing fasciitis (NF) is a severe and sometimes fatal soft tissue infection that spreads quickly along fascial planes. This fast spread frequently results in hemodynamic instability and systemic sepsis, which can progress to multiple organ failure and death. Due to the severity of this illness, it is critical to obtain prompt diagnosis and treatment, including surgical debridement. Necrotizing fasciitis should be handled with a high index of suspicion because of the severity of the effects of delayed therapy. Unfortunately, the frequent presenting symptoms of swelling, pain, and erythema [1] are non-specific, and early necrotizing fasciitis can easily be confused with cellulitis [2], which is generally managed non-operatively. There are more specific "hard symptoms" of necrotizing fasciitis, including exaggerated pain, quickly spreading infection, bullae, skin ecchymosis/sloughing, gas in tissue, skin anaesthesia, edoema other than erythema, and sepsis, however they are present in only 43% of cases [3].

Numerous additional tests, including advanced imaging, tissue oxygen monitoring, the finger test and early histological analysis have been reported to aid in the diagnosis of this difficult clinical situation [4,5]. Another tool to help in diagnosing necrotizing fasciitis is the laboratory risk indicators (LRINEC score). Wong et al. developed this test in 2004 as a diagnostic tool that utilizes routine laboratory tests to differentiate necrotizing fasciitis from other severe soft tissue infections [6]. The LRINEC score is a weighted score from 0-13, using C-reactive protein, glucose, sodium, white blood cell count, hemoglobin and creatinine. The

purpose of this study is to evaluate the LRINEC score in NF patients in Himalayan region.

Material and Method

The approval from the institutional scientific review protocol committee and the ethical committee was taken. Additionally, written informed consent was obtained from the patient. The study included all patients hospitalized to the department of general surgery at Dr. Rajendra Prasad Govt. Medical College & Hospital, Kangra, Tanda, H.P. India with a diagnosis of necrotizing fasciitis for a period of one year, from June 2018 to May 2019.

At the time of admission, the patient's hemoglobin, white blood cell count, C-reactive protein, blood glucose level, urea, sodium, potassium and creatinine levels (LIRNEC Score) were calculated. LRINEC score more than 6 was taken as diagnostic for necrotizing fasciitis.

Results

Laboratory risk indicator for necrotizing soft tissue infection

54 (90%) patients had CRP levels of more than 150 mg/dl. 6 (10%) patients had CRP levels less than 150 mg/dl. WBC count was <15,000 cells/mm3in 32 (53.3%), >15,000 in 18 (30%) and >25,000 in 10 (16.7%) of patients. 41 (68.3%) of cases had haemoglobin levels of less than 11 g/dl. 16 (26.7%), 3(5%) patients had Hb level 11-13.5 g/dl and >13.5 g/dl respectively. Sodium levels were >135 and <135 mmol/l in 14 (23.3%) and 46 (76.7%) of cases respectively. 32 (53.3%) patients had creatinine levels less than 1.6 mg/dl. 17 (28.3%) patients had glucose levels of more than180 mg/dl.43 (71.7%) patients had glucose levels less than 180 mg/dl.

Table 1: Laboratory risk indicator for necrotizing soft tissue infection (n=60)

Indicators		Total no of patients	Percentage
C-Reactive proteins	<150 mg/dl	6	10
	>150 mg/dl	54	90
WBC Count (cells/mm^3)	<15,000	32	53.3
	>15,000	18	30
	>25,000	10	16.7
Haemoglobin level(g/dl)	>13.5	3	5
	11-13.5	16	26.7
	<11	41	68.3
Sodium level (mmol/l)	>135	14	23.3
	<135	46	76.7
Creatinine level (mg/dl)	<1.6	32	53.3
	>1.6	28	46.7
Glucose level (mg/dl)	<180	43	71.7
	>180	17	28.3

(n= total patient in the study)

Lrinec Score

In all the patients LRINEC Score was > 6. Out of 60 patients, 14(23%) patients had LRINEC Score in between 6 to 7 and 46 (76%) patients had LRINEC score >8.

Table 2: LRINEC Score (n=60)

LRINEC Score	Total no of patients	Percentage
<5	0	0
6-7	14	23
>8	46	76

(n= total patient in the study)

Discussion

NF is important surgical urgency with a high mortality rate, even with sufficient treatment, with the reported rate of mortality varying from 6% to 36%. Clinical scores like the LRINEC are available to help diagnose NF and differentiate it from other skin and soft tissue infections. The study by Wong CH et al indicated that LRINEC is an effective tool for early detection of NF and score of 6 and above suggest NF [6]. Watson et al carried out a review study in 33 patients of NSTI. 60% had a LRINEC score > 6 and 40% had a score of < 6

[7]. In our study, all the patients had LRINEC score of more than 6 with a maximum score of 13. The mean LRINEC score in our study was 8.38. LRINEC score predicts the presence of NSTI based on the severity of sepsis and ultimately aiding in the early recognition of NSTI and its management.

Conclusion

LRINEC score is a powerful tool to help differentiate it from other skin and soft tissue infections. In our study, all the patients had LRINEC score of more than 6 with a maximum score of 13. The score of 6 and above suggest NF with the possible addition of clinical perimeters such as pain, pyrexia and comorbidities. It can be an adjunct to a clinical diagnosis.

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