A Systematic Review and Meta-Analysis of the Effectiveness of LRINEC Score in Predicting Upper and Lower Extremity Necrotizing Fasciitis

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Abstract

- Necrotizing Fasciitis (N.F) is a life and limb threatening infection.
- Risk factors include diabetes, immunosuppression, and those 60 years and older.
- Mortality rate of N.F ranges between 24-34%. Early diagnosis is imperative to clinical management.
- Average cost to manage each case of N.F ranges between $50,000-100,000.
- The Laboratory Risk Indicator for N.F. (LRINEC) was developed as an early screening tool to predict N.F.¹
- Few citations state the anatomical location of N.F presentation.

Statement of Purpose

- The present study was conducted to evaluate the effectiveness of LRINEC score in predicting upper and lower extremity necrotizing fasciitis.

Level of Evidence: 2

Methodology

- A literature search across Pubmed, Scopus, Cochrane library, and Embase was conducted using the keywords “necrotizing fasciitis” OR “Gangrene” AND “LRINEC.”
- All results must contain sensitivity and specificity values.
- Meta-analysis articles required further inclusion criteria of 2 x 2 tables with true positive, false positive, true negative, and false negative values, either extractable or calculable from the results presented.

Results

- A total of 11 articles were included in the systematic review for this study and 4 articles were identified for the meta-analysis.
- Sensitivity = 49.4% [CI: 41.5%, 57.3%]
- Specificity = 83.2% [CI: 80.1%, 85.6%]
- Positive Predictive Value = 34.9% [CI: 30.3%, 39.9%]
- Negative Predictive Value = 90.0% [CI: 88.5%, 91.3%]
- Accuracy = 78.0% [CI: 75.3%, 80.4%]
- Accuracy is a measure of whether a patient was correctly classified.
- The odds that a patient has Necrotizing Fasciitis and has a LRINEC Score ≥6 is 4.286.

Discussion and Conclusions

- From the current literature, LRINEC is associated with accurate prediction of the presence of N.F in the extremities.
- However, within the scope of diabetic foot infections, LRINEC has not been investigated thoroughly, with less than half of the current studies examining this target cohort.
- Few citations state the anatomical location of N.F presentation, and the current review’s citations consist of cohorts with ≤50% diabetics.
- Specificity was often higher than sensitivity in most studies, suggesting LRINEC may be more useful as a tool to screen out N.F as opposed to predicting the presence of N.F.
- Diabetics are subject to an inherently increased LRINEC score due to the anthropometric nature of the laboratory values used to calculate the score.
- Although diabetics have the greatest risk for contracting N.F, only 1/11 studies performed a subset analysis.
- LRINEC may be useful in certain cohorts, but utility in diabetics remains largely unexplored, prompting further investigation.

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References

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