A 2-factor model helped rule out early-stage necrotizing fasciitis


**Question**
How accurate is a 2-factor model in differentiating early-stage necrotizing fasciitis (NF) from other non-necrotizing soft-tissue infections (NNFs)?

**Design**
The model was derived by using data from a previous case–control study, and a retrospective cohort study was used to validate the model.

**Setting**
A university medical center in Torrance, California, United States.

**Patients**
Data from 42 patients (mean age 39 y, 81% men, 50% with NF and 50% with NNF) were used for the derivation set, and data from 359 patients (mean age 44 y, 77% men, 9% with NF and 91% with NNF) hospitalized between April 1998 and March 1999 with a primary diagnosis of NF or NNF infection at discharge were used for the validation set. More patients with NF had a history of hepatitis (19% vs 7%, P = 0.03) and were intravenous (IV) drug users (71% vs 30%, P < 0.001).

**Description of Prediction Guide**
Derivation included comparison of vital signs on admission, findings on physical examination, laboratory measurements, and radiographic studies. The decision-tree model predicted NF in the derivation set if a patient, at admission, had a white blood cell (WBC) count > 15.4 × 10⁹/L or a serum sodium level < 135 mmol/L, or both. The serum sodium level measurement was adjusted with the following mathematical formula for patients with hyperglycemia (serum glucose level > 200 mg/dL): corrected sodium level = measured sodium level + 0.016 (measured glucose level – 100).

**Main Outcome Measure**
Surgery-confirmed necrotic fascia or muscle.

**Main Results**
In the validation set, 39% of patients with NF had ≥ 1 characteristic clinical finding, such as necrotic skin, bullae, or gas on radiography. The model predicted NF for 28 of the 31 patients (90%) with NF and 80 of the 328 patients (24%) with NNF. Of patients with NF, 16 met the criteria by using the WBC count alone, 1 by using serum sodium levels alone, and 11 by using both. Sensitivities, specificities, and likelihood ratios are shown in the Table.

**Conclusion**
In patients with soft-tissue infections, a model using 2 factors (high white blood cell count or low serum sodium levels) helped rule out early-stage necrotizing fasciitis.

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**For correspondence:** Dr. C. de Virgilio, Department of Surgery, Harbor-UCLA Medical Center, 1000 West Carson Street, Box 25, Torrance, CA 90509, USA. FAX 310-782-1562.

**References**