

Predicting sepsis in Stevens-Johnson syndrome—toxic epidermal necrolysis: Should dermatologists be pro-procalcitonin?



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Stevens-Johnson syndrome—toxic epidermal necrolysis (SJS-TEN) demands our attention—complications of fluid and electrolyte imbalances and sepsis must be addressed to reduce morbidity and mortality. Classification of disease is based on the degree of epidermal detachment, with <10% body surface area (BSA) involvement designated SJS, 10%-30% BSA designated SJS-TEN overlap, and >30% BSA designated TEN. In-hospital mortality in adults has been estimated to be 12%-40%, varying on the extent of epidermal detachment at presentation.¹

The SJS-TEN disorders have been regarded as T-cell-mediated because of the associated drug hypersensitivity and because infections are rare. Activated T cells secrete large amounts of tumor necrosis factor α , interferon γ , perforin, granzyme B, and granulysin, resulting in Fas ligand upregulation and Fas-mediated keratinocyte apoptosis.² Therapeutic efforts that impede this process remain controversial but have included corticosteroids, intravenous immunoglobulin, cyclosporine, and etanercept.

Stratifying risk in SJS-TEN is essential for determining therapeutic interventions, especially antibiotic administration for those at risk of sepsis. SCORTEN (SCORE of TEN) is the most frequently used severity of illness score and is based on 7 independent risk factors (age >40 years, malignancy, tachycardia >120 beats/min, initial percentage of epidermal detachment >10%, serum urea >10 mmol/L, serum glucose >14 mmol/L, and bicarbonate <20 mmol/L).³ The newly described ABCD-10 (age, bicarbonate level, cancer, dialysis,

and 10% BSA involvement) is a 5-item mortality prediction model performed similarly as SCORTEN.¹

In this issue of the Journal of the American Academy of Dermatology, Koh et al performed a retrospective cohort study aiming to identify risk factors predictive of sepsis in SJS-TEN patients. The study included 176 patients: 59 with SJS, 51 with SJS-TEN overlap, and 66 with TEN. Bacteremia developed in 52 patients (29.5%) during hospitalization; these patients had poorer outcomes, including higher intensive care unit admission ($P < .0005$), longer length of stay ($P < .0005$), and higher mortality ($P < .0005$). The bacteria isolates included *Acinetobacter baumannii* (27.7%, $n = 31$) and *Staphylococcus aureus* (21.4%, $n = 24$). Clinical factors predictive of bacteremia included hemoglobin ≤ 10 g/dL (odds ratio [OR] 2.4), pre-existing cardiovascular disease (OR 2.10), and BSA $\geq 10\%$ (OR 14.3). A bacteremia risk score was constructed with good predictive value. Hypothermia ($P = .03$) and procalcitonin ≥ 1 $\mu\text{g/L}$ ($P = .02$) were predictive of blood culture positivity. The authors concluded that hemoglobin ≤ 10 g/dL, pre-existing cardiovascular disease, and BSA $\geq 10\%$ on admission were risk factors for bacteremia. Hypothermia and elevated procalcitonin are useful markers for the timely detection of bacteremia.⁴

I was intrigued by the possibility of a simple blood test predicting the risk of sepsis. Procalcitonin, the precursor of the hormone calcitonin, is elevated in sepsis, having proinflammatory effects similar to those of C-reactive protein. The procalcitonin test is a Food and Drug Administration–approved test that aids in the diagnosis of sepsis but with questionable

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Funding sources: None.

Conflicts of interest: None disclosed.

Reprints not available from the author.

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J Am Acad Dermatol 2019;81:684-5.
0190-9622/\$36.00

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<https://doi.org/10.1016/j.jaad.2019.06.003>

efficacy; its main utility is in determining the appropriate time for antibiotic de-escalation.⁵

Refinements to scoring systems predictive of sepsis in SJS-TEN patients are highly desired to improve outcomes. Clinicians need not necessarily be pro-procalcitonin but must be vigilant of all measures of the bacteremia risk score, assuring that sepsis risk is kept to a minimum in these highly vulnerable patients.

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