

select patients with sepsis who could be discharged safely from the ED.

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COMMENT ON: “HELPFUL ONLY WHEN ELEVATED: INITIAL SERUM LACTATE IN STABLE EMERGENCY DEPARTMENT PATIENTS WITH SEPSIS IS SPECIFIC, BUT NOT SENSITIVE FOR FUTURE DETERIORATION”



To the Editor:

We thank Dr. Úbeda-Iglesias and colleagues for their comments on our paper (1). They have raised some

interesting points. We do agree that initial serum lactate certainly does have a role in the disposition of emergency department (ED) patients presenting with suspected infection. However, the utilization method of this biomarker is very important, and it is here where we have some concerns related to the comments made by Úbeda-Iglesias et al.

We agree that a high initial serum lactate is an ominous sign. The studies cited by these authors all suggest that a high serum lactate is associated with increased risk of deterioration or death. They include studies of patients with suspected sepsis, those with septic shock, as well as studies that more broadly investigate all patients presenting to the ED (2–4). All of these studies found that elevated lactate was associated with mortality. Indeed, this is similar to our study, where a lactate ≥ 4.0 mmol/L was associated with a positive likelihood ratio of 10.7 for future deterioration. However, it is important to note that none of the studies cited by Úbeda-Iglesias and colleagues concluded that ED lactate could be utilized for safely discharging patients from the ED. In fact, the study by Park et al. found that the sensitivity of a serum lactate level of even ≥ 2.7 mmol/L only had a sensitivity of 56.7% for mortality. We similarly found that a lactate ≥ 2.0 mmol/L had a sensitivity of 67.1% for future deterioration (1). In other words, one-third of patients who deteriorated within 72 h had normal lactate initially. Thus, we would vigorously disagree with Úbeda-Iglesias et al. and their assertion that “an initially normal serum lactate (i.e., < 2.0) may be used to discharge patients with suspected infection.”

When using any clinical tool for predicting subsequent deterioration in the ED (whether it be a laboratory value, an imaging test, or a clinical decision rule), it is important that this tool should have very high sensitivity, as a false negative would result in a poor outcome (i.e., a patient who is discharged home when they should not have been). Therefore, in the ED, specificity of the tool matters relatively less, because while false positives are undesirable, the consequences are not as dire as false negatives. For this reason, accuracy metrics that weight sensitivity and specificity equally (such as the area under the receiver operating characteristic curve) are misleading, as poor sensitivity can be masked by higher specificity (5).

The authors also suggest that the quick Sequential (Sepsis-Related) Organ Failure Assessment (qSOFA) score may be added to serum lactate to aid in the discharge of patients with sepsis (6). However, our group found that qSOFA has poor sensitivity, particularly in the ED, and especially when compared to Systemic Inflammatory Response Syndrome (SIRS) criteria (7,8). Our study effectively combined the SIRS criteria with serum lactate and found that this did not result in a sufficient sensitivity

Conflict of Interest—Andrew J. E. Seely holds patents related to multiorgan variability analysis, and has shares in Therapeutic Monitoring Systems, a company whose mission is to help deliver waveform-based, variability-directed clinical decision support products to the bedside to improve care.

for utilization in the safe discharge of patients from the ED (1). It is therefore unlikely that qSOFA would be more suitable in this regard, though further research is required.

Finally, it is important to mention that all of the studies cited by Úbeda-Iglesias et al. utilized mortality as a primary outcome. While mortality is certainly an important and patient-centered outcome, the job of the emergency physician is more focused upon identifying the risk of future deterioration, of which mortality is only a single component. For example, an emergency physician who discharges a patient home with pneumonia and oral antibiotics, only to find that the patient returned 24 h later and was intubated, suffered a long course of critical care, and was ultimately discharged with severe disability, would not find much solace in the fact that the patient did not die. This again reinforces the difficult nature of disposition in the ED. Patients who deteriorate after ward transfer (and requiring intensive care unit admission in a delayed fashion) suffer longer hospital stays and greater costs of care, beyond the issue of mortality itself (9). Thus, we believe emergency physicians should therefore focus discharge decision making on the risk of short-term deterioration, and not simply mortality. Utilizing ED lactate for safe discharge of patients with infection is not supported by our study or others, and may result in adverse outcomes in this population.

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STINGRAY ENVENOMATION REQUIRES IMAGING



To the Editor:

We read with interest the prospective study of stingray envenomation by Myatt et al. (1). We took particular note of the absence of any radiologic imaging among their cohort, despite the presence of persistent symptoms 3 days post-injury and development of infection in at least 1 subject at 6 days post-enrollment. Animal parts such as fangs, claws, and cartilaginous skeletal remnants, like stingray barbs, are radiopaque and retention of said animal parts can result in very serious, long-term wound complications, not the least of which is infection.

The only reason to utilize a test—any test—is if the results of the test might change your planned management. Because animal body parts are radiopaque and their presence would surely require removal or additional management strategies, we strongly recommend that all of these (stingray) injuries undergo evaluation with an x-ray study, specifically to evaluate for the presence of retained foreign bodies. In addition, the stingray barb is encased in a radiolucent integumentary sheath impregnated with the venom, therefore, it is our practice to perform limited local exploration and extensively irrigate these wounds with hot water.