ABSTRACT

Introduction

Patients with sepsis require early and effective resuscitation and treatment to reduce their high rates of morbidity and mortality. The Critical Care Care Resuscitation Unit (CCRU) at the University of Maryland Medical Center (UMMC) specializes in early resuscitation of critically ill patients who are transferred from referring hospitals to the UMMC for higher levels of care. We hypothesized that lactate clearance and reduction of the Sequential Organ Failure Assessment (SOFA) score during patients' CCRU stay would be associated with lower in-hospital mortality.

Method

This was a retrospective study of adult patients who had diagnoses of sepsis and were admitted to the CCRU from 01/01/-12/31/2018. Patients who died in the CCRU were excluded because a majority of them had been transitioned to comfort measures by their families.. Stepwise multivariable logistic regressions were conducted to measure association of clinical factors, lactate clearance, SOFA reduction with hospital mortality.

Results

We identified and analyzed charts from 401 patients with lactate clearance data and 455 patients with SOFA score data. Mean (standard deviation) patients' age was 53.9 (16.0) years, median length of stay in the CCRU of 6 hours and 24 minutes (IQR 3:12, 17:36). The average lactate and SOFA score on admission were 2.2 (1.8) mmol/L and 4.4 (4.3), respectively. Average lactate clearance was 0.1 (2.6) mmol/L, average SOFA score reduction was 0.65 (5.9).

Patients who had SOFA score reduction, but not lactate clearance, during CCRU stay were associated with 26% reduction of mortality (OR 0.74, 95% 0.68-0.81, P <0.001). SOFA score reduction was associated with lower hospital mortality for both surgical patients (OR 0.69, 95% CI 0.58-0.81, P <0.001), and non-surgical patients (OR 0.71 95% CI 0.06-0.83, P<0.001).

Conclusion

Patients with sepsis diagnoses had a small clearance of serum lactate levels and a relatively larger reduction of SOFA score during their stay in the CCRU. SOFA score reduction, but not lactate clearance during the CCRU stay, was associated with lower odds of in-hospital mortality, which suggests the benefit of early resuscitation among patients with sepsis. Further studies are needed to confirm our observations.