Acute Kidney Injury in Patients with Rhabdomyolysis: Risk Factors and Outcomes

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Introduction: Rhabdomyolysis can cause severe acute kidney injury (AKI), which may increase morbidity and mortality. The McMahon risk score can predict outcomes but does not include AKI. Therefore, it may be useful to use AKI as a predictor of severity in patients with rhabdomyolysis.

Objective: To determine risk factors for the development of AKI and the effect of AKI on in-hospital mortality and 30-day readmissions in patients with rhabdomyolysis.

Methods: We conducted a historical cohort study of patients ages 18 years and older who developed rhabdomyolysis within three days of hospital admission with baseline normal renal function between 1/1/2018 and 11/30/2021. Data were collected on demographic and clinical characteristics, including comorbidities included in the Charlson Comorbidity Index and data needed to compute a McMahon risk score. Data were analyzed using Student's t-test, the chi-squared test, the Mann-Whitney U test, and multiple logistic regression.

Results: We reviewed 484 patients, mean age 48.4 ± 18.0 years, 76.4% male and 59.3% black. On univariable analysis, patients with McMahon score of six or greater had a greater incidence of AKI and mortality ($p<0.001$). Patients who developed AKI with a history of myocardial infarction (MI) had more 30-day readmissions ($p<0.001$). On multivariable analysis, after controlling for diabetes and a history of MI, patients with a McMahon score of six or greater were 6.3 times more likely to develop AKI. When looking at predictors of mortality, after controlling for AKI and other comorbidities, a McMahon score of six or more increased the odds of death 5.7 times ($p<0.001$). Conversely, after controlling for comorbidities, a higher McMahon score was associated with a lower risk of readmissions (OR=0.43, $p=0.005$).

Conclusions: Our study demonstrates that AKI contributes to mortality and 30-day readmissions but not necessarily as a predictor, because of its relationship with the McMahon score. The McMahon score itself may be more accurate if made to include other risk factors. Further study may be warranted on the McMahon risk score in predicting hospital readmission.