

Serum Potassium Levels at Admission as a Predictor of Major Adverse Cardiovascular Outcomes in Hospital and 30 Days after Discharge in Acute Heart Failure Patients

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Abstract:Background: Acute Heart Failure (AHF) is still a problem in the world, with mortality and morbidity rates in patients with acute HF are still high. Prognosis estimation in acute heart failure patients still develops. Serum potassium levels can be used as a predictor in patients with acute heart failure. Low and high potassium levels are often a problem in the treatment of patients with acute heart failure. This study aims to determine whether potassium can be used as a predictor of major cardiovascular events (MACE) in patients with acute heart failure. **Method:** This study is a prospective cohort study of 94 patients with acute heart failure treated in Haji Adam Malik General Hospital from August 2017 to February 2018. The cut off point of potassium levels was determined by using ROC curve, then bivariate and multivariate analysis were applied to determine predictor of in hospital major cardiovascular events and 30 days post discharge. Kaplan Meier's survival test was performed to assess survival rate.

Result: From 94 subjects, 36 (38.3%) subjects experienced MACE during treatment in hospital. Subjects with arrhythmias during treatment were 5 people (5.3%) and 28 people (29.8%) dead in this study. From the ROC curve, potassium cut off level was 4.45 mEq/L. According to bivariate analysis, age, sex, osmolality, blood urea nitrogen, blood sugar, potassium, creatinine, and ejection fraction were significant as MACE predictors. From multivariate analysis, potassium ≥ 4.45 mEq/L was a predictor of MACE during treatment in hospital ($p = 0.000$ OR 8.201 CI 95%: 2.557-26.301) along with age and creatinine. The survival test showed a relative risk of death 3.05 times in potassium ≥ 4.45 mEq/L.

Conclusion: The potassium level at admission was significant to predict in hospital MACE in acute heart failure, but not a good predictor for 30 days after discharge.

Keywords: Serum Potassium level, Acute Heart Failure, MACE.

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