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The Role of Furosemide Stress Test in the Prediction of Severity and Outcome of Sepsis-Induced Acute Kidney Injury

Yasmine S Naga

Alexandria University Hospital, Alexandria, Egypt

Introduction

Acute kidney injury (AKI) is a common complication of sepsis in ICU patients. No test has been shown to definitively predict its occurrence and progression to more severe stages. The aim of the study was to investigate the ability of furosemide stress test (FST) to predict the development and progression of AKI in critically ill patients, and to compare it to the level of serum cystatin C.

Patients and methods We studied 60 patients who were subdivided into four groups: each group included 15 patients who had normal renal functions, AKI stages 1, 2, and 3, respectively. Clinical, laboratory, and therapeutic data were collected. Serum cystatin C levels were assessed by the enzyme-linked immunosorbent assay technique and FST (at a dose of 1.0 or 1.5 mg/kg according to previous furosemide exposure) was performed for each patient with assessment of their urine output during the following 2 h.

Results In our study, we compared the ability of FST to predict the progression of AKI in each stage. The sensitivity of FST to predict the outcome of AKI was 89.29% and its specificity was 93.75%, while the sensitivity of serum cystatin C to predict the outcome was 82.14% and its specificity was 31.25% with area under the curve=0.742.

Conclusions The FST in patients with early AKI serves as a cheap, easily available tool to assess tubular kidney function with prognostic capacity to assess the occurrence and the progression of AKI in septic ICU patients.

Keywords: acute kidney injury, cystatin C, furosemide stress test, sepsis