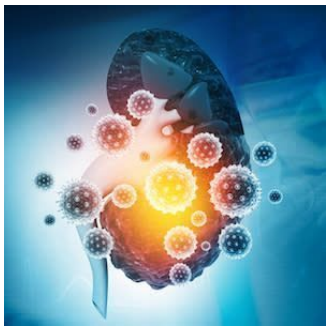
ICU
MANAGEMENT & PRACTICE

Biomarkers to Identify Acute Kidney Injury for Early Sepsis Detection



Early recognition of sepsis is vital for improving patient outcomes. If detected on time, sepsis can be treated with antibiotics and source control, recognition and reversal of shock and organ support. The three most common organ dysfunctions in sepsis are cardiovascular, renal and respiratory. Cardiovascular and respiratory organ dysfunctions are easier to recognise. But detection of acute kidney injury can be quite difficult. That is why diagnosis can often be missed or delayed in some patients.

Acute kidney injury is one of the most common organ failures in patients with sepsis. But since its presentation is not always apparent, novel biomarkers could be used to improve organ failure detection so that early sepsis care could be facilitated.

There are biomarkers available to detect acute kidney injury prior to clinical/laboratory indicators of kidney dysfunction. Tests using two biomarkers - tissue inhibitor of metalloproteinases (TIMP)–2 and insulin-like growth factor binding protein (IGFBP) have a specificity of 95% to predict kidney disease.

A study was conducted with critically ill adult patients admitted to the ICU without evidence of acute kidney injury at the time of enrolment. Patients were stratified into three groups - those with a clinical diagnosis of sepsis, those with infection but without sepsis and those without infection. The investigators examined 30-day mortality by acute kidney injury within each group. They also determined the operating characteristics for kidney stress markers - (tissue inhibitor of metalloproteinases-2) × (insulin-like growth factor binding protein 7) test for prediction of acute kidney injury as a sepsis-defining organ failure in patients with infection but without a clinical diagnosis of sepsis.

Findings show that with all groups combined, 30-day mortality was 23% for patients who developed stage 2-3 acute kidney injury within the first three days compared with 14% for patients without stage 2-3 acute kidney injury. The difference was greatest in the infection without sepsis group. 11.7% of patients in the infection/no sepsis group tested positive, of which 71.4% develop stage 2-3 acute kidney injury.

These findings suggest that the use of urinary ((tissue inhibitor of metalloproteinases-2) × (insulin-like growth factor binding protein 7) test could identify acute kidney injury in patients with infection and could help detect sepsis a day before acute kidney injury becomes apparent.

Source: Critical Care

Image Credit: iStock

Published on : Tue, 23 Mar 2021