

ABSTRACT

Background: Patient assessment by imaging studies using contrast media is currently replacing open procedures, especially in high-risk patients. However, the use of such contrast media might result in acute events and injuries after the procedure. Contrast-induced nephropathy (CIN) is a complex syndrome of acute renal failure occurring after the administration of iodinated contrast media. With the increasing use of radiocontrast media in diagnostic and interventional procedures over the last 30 years, CIN has become the third leading cause of hospital acquired acute renal failure, at least in the United States and Europe. The performance of urinary L-FABP which is a 14-kDa protein expressed in proximal tubular epithelial cells as an early detection marker of AKI has shown promise in various clinical settings. Determination of the renal resistive index (RI) by Doppler sonography has also been suggested as a means of diagnosing acute tubular necrosis.

Objective: The aim of our work is prospective assessment of the clinical biomarker L-FABP and the renal artery duplex for early prediction of acute kidney injury in patients scheduled for coronary angiography.

Methods: The present study was conducted on 40 patients admitted to the ICU Critical Care Department, Cairo University Hospitals scheduled for coronary angiography. Different risk factors for AKI were evaluated, including: Patients with diabetes mellitus, hypertension, dyslipidemia, smoking, ischemic heart disease and the number of diseased coronary arteries. The L-FABP and renal artery duplex was studied for early prediction of acute kidney injury before and after coronary angiography.

Results: After coronary angiography mean serum creatinine was significantly increased (p value < 0.006) but still not beyond the critical value. Again the mean creatinine clearance was significantly reduced in our patients after usage of contrast (p value < 0.000). Mean L-FABP significantly increased 4 hours after coronary angiography and the sensitivity of L-FABP to CIN is 41% and specificity is 76% (with an AUC-ROC of 0.55). The mean RRI was significantly increased after angiography but Pulsatility before and after coronary angiography show no statistically significant difference. The sensitivity of RRI to CIN is 69% and specificity is 48% (with an AUC-ROC of 0.56).

Conclusion: This study highlighted the importance of urinary L-FABP levels and RRI in early detection of AKI associated with contrast administration earlier than serum creatinine. The sensitivity of RI to CIN is 69% and specificity is 31% while the sensitivity of L-FABP to CIN is 41% and specificity is 76%.