Kidney Injury Molecule 1 (KIM-1) as a Biomarker for Contrast-Induced Acute Kidney Injury

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Introduction

Contrast-induced acute kidney injury (CI-AKI) is caused by intravenous or intra-arterial administration of a contrast medium and represents one of the leading causes of acute kidney injury. Early detection of CI-AKI is crucial and different biomarkers for detection of this complication have been tested. KIM-1 as one of these biomarkers for AKI is a type 1 transmembrane glycoprotein that is normally expressed in kidney tissue. It shows marked up regulation in proximal renal tubular cells in response to ischemic or nephrotoxic AKI.

Aim

Aim of the present study is to assess the role of KIM-1 in early diagnosis of CI-AKI among patients undergoing coronary angiography.

Subjects

This study included 40 patients undergoing coronary angiography. Based on creatinine criteria of CI-AKI, patients were classified into two groups:

- Group 1: included 20 patients with CI-AKI as a study group.
- Group 2: included 20 patients without CI- AKI as a control group

AKI was defined as an increase in serum creatinine (SCr) of ≥ 0.3 mg/dl or ≥ 1.5 times baseline SCr within 48 h (according to 2012 KDIGO guidelines). Exclusion criteria included CKD stage 5, advanced congestive heart failure, history of reaction to contrast medium, and use of any potentially nephrotoxic medicines.

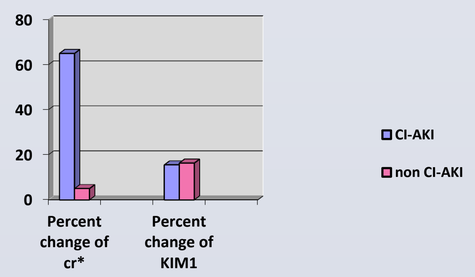
Methods

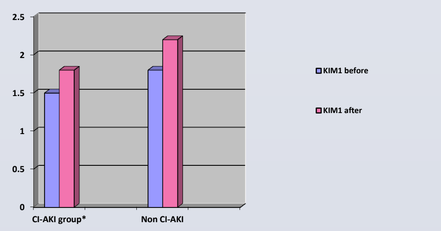
All subjects in the present study were subjected to the following:

1. History taking, with special concern to history of previous renal disease, drug history, history of the cardiac disease that necessitated the need of this study.
2. Full Clinical Examination.
3. Laboratory Investigations:

- Routine laboratory investigations was performed including complete blood picture, random blood sugar, lipid profile together with serum creatinine before and 48 hours after the contrast administration to diagnose CI-AKI.
- Serum KIM-1 was assessed by ELISA before and 6 hours after administration of the contrast material in coronary angiography.

Results





Comparison between two studied groups in KIM1 value before and after contrast administration

No correlations has been found between percent change of KIM1 and any of the following; age of the patient, volume of the contrast, ejection fraction, hemoglobin level, random blood sugar, lipid profile and baseline creatinine value.

Conclusions

Serum KIM-1 could not be used as a biomarker to diagnose early cases of CI-AKI. Other biomarkers as NGAL, Cystatin C, IL18 should be studied in larger studies.