Novel Urinary Biomarkers in Acute Kidney Injury

Purpose: The aim of this study is to review the role of novel urinary biomarkers in diagnosing acute kidney injury (AKI) in children.

Methods: A literature search was done using PUBMED, EBSCO host database, and GOOGLE SCHOLAR of all articles including reviews and guidelines on biomarkers of AKI in children. A total of 240 articles including review articles published over the last 10 years were searched and reviewed.

Results: To date over 20 biomarkers of AKI have been studied both in blood and urine but urinary biomarkers have been easier to measure and have shown significant promise as early diagnostic tests for AKI and for portending outcome. The most intensely studied urinary biomarkers for AKI in children that have shown promise for clinical use include: neutrophil gelatinase-associated lipocalin (NGAL), interleukin-18 (IL-18), kidney injury molecule-1 (KIM-1) and liver-type fatty acid-binding protein. Also, cystatin C has been shown to be a more accurate predictor of glomerular filtration rate and may also be more accurate in predicting AKI. Although cystatin C has been shown to rise approximately 1 day earlier before serum creatinine in adults, more research is required in children.

Conclusion: As our understanding of AKI biomarkers increases, hopefully in the near future we will be able to not only diagnose AKI earlier but also use these biomarkers to determine the site of the kidney injury and the mechanism of development of AKI (e.g. ischemic vs. nephrotoxic).

Biography
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