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Rajendra Bhimma

University of KwaZulu-Natal, South Africa

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 for detection 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 used 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 approximate 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. ischaemic vs. nephrotoxic).

Biography

Rajendra Bhimma, MB, ChB, MD, DCH (SA), FCP (Paeds)(SA), MMed (Natal), Associate Professor of Pediatrics, Principal Specialist, Department of Pediatrics and Child Health, Nelson R Mandela School of Medicine, University of KwaZulu-Natal, South Africa. Published over 50 articles in peer-reviewed journals. Member of the following Societies: American Association for the Advancement of Science, International Pediatric Transplant Association, International Society of Nephrology, South African Medical Association, South African Paediatric Association, South African Transplant Society. Research interest in glomerular diseases, especially HIV associated kidney diseases. A long-standing member of the Biomedical Research Ethics Committee of the University of KwaZulu-Natal and an editorial board member of two international journals.

BHIMMA@ukzn.ac.za

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