KSN 2020
FULLY VIRTUAL MEETING

Abstract Type : Poster
Abstract Submission No. : PO-1291

Kidney Injury Molecule-1 and Acute Kidney Injury on children : A Systematic Literature Review

Aprillio Bagas Sriwisnu[1], Luthfi Saiful Arif[2]
[1]Department of Emergency department, Batang Public Hospital, Indonesia
[2]Department of Emergency Department, Dr Haryoto Regional Hospital, Indonesia

Objectives:

Acute kidney injury (AKI), which is a common problem in neonatal intensive care units (NICU) as well as pediatric intensive care units (PICU), can affects morbidity and mortality. Urinary kidney injury molecule-1 (KIM-1) is noninvasive detection, seen as future examination to detect early stages of AKI, mortality and morbidity and needs of Renal Replacement Therapy (RRT). This study aims to investigate association of KIM-1 and Acute Kidney Injury in neonatal and pediatric patients.

Methods:

A literature search was conducted using PubMed and capturing the data last 10 years. Terms used included MeSH headings for KIM-1, AKI, infants, and children. A systematic review of published studies was performed. Articles including KIM-1, AKI, infants, and children were included. We analyzed the usage of uKIM-1 as predictor of AKI, mortality and morbidity and needs of RRT.

Results:

These studies showed contradictory results. Two studies stated that KIM-1 may serve as a predictor of early stage of AKI, two other studies suggest otherwise. The studies showed that uKIM-1 can be useful for prediction of RRT.

Conclusions:

Kidney Injury Molecule-1 may be useful for prediction of Renal Replacement Therapy. Usability of KIM-1 as a predictor of early stage of AKI requires more studies.

table 1

Table 1. Characteristics of the studies used in this systematic review

Author and Date	Location	Population (n) at end of study	Time	Methods	Outcome .
Westhoff et al., 2017	Germany	141	October 2011 – May 2015	A cross-sectional cohort study; three groups; 55 patients with established AKI, The non-AKI patient group (n = 27) and The healthy control group (n = 59) These groups' urine samples has been checked for urinary calprotectin, KIM-1, and NGAL.	Urinary KIM-1 (pg/mL) in AKI group is higher than the other groups ($p < 0.001$). KIM-1 can be useful for the prediction of RRT (Renal replacement therapy), but can not be used as mortality predtictor.
Stojanović et al., 2015	Serbia	22	01 January 2013 to 31 Decembe r 2013	The study included 22 extremely LBW neonates who were hospitalized in the neonatal ICU. They were divided into two groups , with and without AKI. Detection and quantification of uKIM-1 was done on the third day of life.	KIM-1 is a significant predictor of death. On the other hand,the study failed to prove that KIM-1 rapid test has any significance for early prediction of AKI
Zwiers et al., 2015	Netherland	108	June 2010 to March 2014	Serum and urine samples of 106 basically healthy infants aged 1 day to 1 year were collected. Urine samples were assayed for creatinine, uNGAL (ng/mL) and uKIM-1 (ng/mL).	uKIM-1 concentrations were extremely low in almost all 106 subjects .This finding suggests that uKIM-1 may serve a useful purpose in identifying early proximal tubular damage as any rise in urine concentration indicates injury.
Genc et al., 2013	Turkey	48	March 2010 and January 2011	Forty-eight premature babies hospitalized into three groups: group I, healthy premature infants; group II, preterm infants with RDS without AKI; group III, preterm infants with RDS and AKI. uKIM-1 and creatinine along with creatinine levels were measured.	uKIM-1 levels in babies with RDS and AKI were higher than the other two groups. Serial uKIM-1 measurements can be used as a noninvasive indicator of kidney injury and uKIM-1 can be an ideal biomarker in premature infants.

flowchart

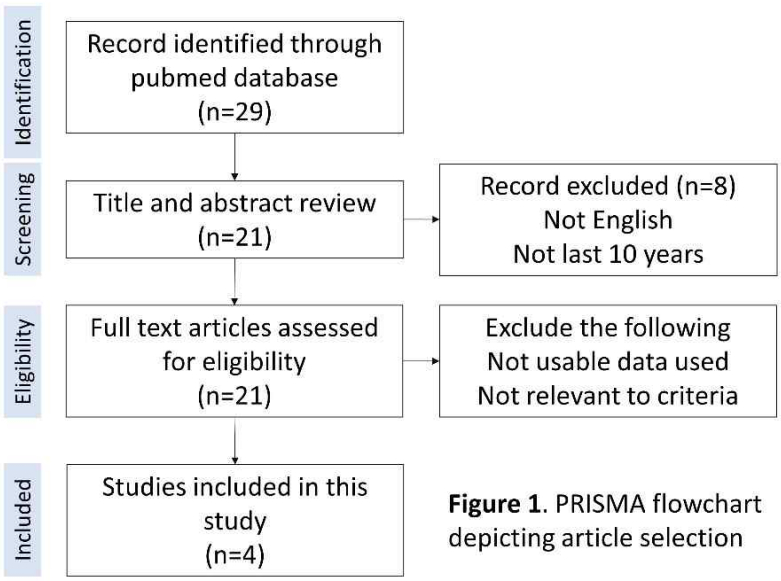

Figure 1. PRISMA flowchart depicting article selection