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Acute Kidney Injury Induced by Beta lactam Antibiotics in Children: A Scoping Review

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Objectives: Antibiotics are one of the agent causes of Nephrotoxic Acute Kidney Injuries (AKI) in children. Recent study in PICU has shown the incidence of nephrotoxicity by antibiotics reaches 16% in children. Study showed that combinations between B-lactam and aminoglycoside in preterm have greater renal tubular injury, while combinations of Vancomycin and Piperacillin/Tazobactam in pediatric patients have the highest nephrotoxic effect. However other beta-lactam types are not widely known for their nephrotoxic effect. This study aims to examine the role of beta-lactam antibiotics in inducing renal failure in children.

Methods: This search for scoping review on the effect of beta lactam antibiotics in children was carried out in December-January 2022-2023. We used search engines PubMed, Google Scholar, Springer, Elsevier, and Europe PMC with the year of publication 2012-2022 which were then extracted. The keyword combinations used are: "beta lactams" OR "β-lactams" AND "acute renal failure" OR "acute renal injury" OR "nephrotoxic" OR "nephrotoxicity" AND "children" OR "pediatric" OR "neonate" NOT "adult". Studies were excluded if the: (i) adult; (ii) were a review, systematic review or meta-analysis; (iii) written in a language other than English; (iv) not available in full text; (v) have kidney disease before (vi) in vitro or in vivo. The article selection process was based on PRISMA-ScR.

Results: From 4032 articles which met the search criteria, 3 studies met the inclusion criteria. The result shows that beta-lactam antibiotics increase the risk of acute Renal injury in children.

Conclusions: There is an association between Acute Kidney Injury induced by beta-lactam treatment in children

PRISMA Flowchart