**BACKGROUND**

- Preterm newborns are at risk for persistence of the ductus arteriosus (PDA), and ductal closure with non-steroidal anti-inflammatory drugs (NSAIDs) such as indomethacin is common.
- Acute kidney injury (AKI) occurs in up to 40% of the neonatal population.
- Because indomethacin mediates vasoconstriction in both the ductus arteriosus and afferent arteriole of the renal glomerulus, we hypothesized that AKI observed during indomethacin therapy for PDA might be a marker of treatment efficacy.

**STUDY OBJECTIVES**

- Describe the incidence of AKI among preterm infants exposed to indomethacin;
- Determine whether AKI during indomethacin therapy is associated with subsequent PDA closure.

**DESIGN AND METHODS**

We performed a retrospective cohort study of all infants <33 weeks gestational age at birth admitted to University of Colorado and Denver Health NICUs between November 2016 and November 2019, who received indomethacin in the first two weeks of life. AKI in the 7-day period after indomethacin was defined by the modified neonatal Kidney Disease Improving Global Outcomes (KDIGO) criteria. PDA closure was defined clinically and/or echocardiographically. Perinatal and postnatal characteristics were evaluated. Multivariate logistic regression was performed.

**RESULTS**

150 preterm infants were included. The incidence of AKI was 8%. Survival to discharge was statistically similar in both groups. The PDA closed in 52.8% of the non-AKI group and 75.0% of the AKI group (OR 1.78, 95% CI 0.512-6.190). PDA closure was determined by echocardiogram in 64% and clinical assessment in 36%. Odds of PDA closure in the AKI versus non-AKI group was not significantly changed after adjusting for gestational age, day of life at indomethacin start, delivery mode, cumulative dose of indomethacin, and other nephrotoxic drug exposure. Cumulative indomethacin dose appeared to be a confounder.

**CONCLUSIONS**

We did not demonstrate a statistically significant relationship between AKI during indomethacin therapy and subsequent PDA closure. The incidence rate and severity of AKI (defined by KDIGO criteria) was considerably lower than expected, as a result, we were underpowered to detect a difference in rates of PDA closure between the AKI and non-AKI groups. Better surveillance of renal function during indomethacin therapy and utilizing more sensitive biomarkers of AKI may better identify infants with AKI. Larger studies evaluating the association between AKI and PDA closure after indomethacin therapy are warranted.

**REFERENCES**

*Screened for acyclovir, gentamicin, captopril, vancomycin, amphotericin, radiocontrast exposure. Gentamicin and vancomycin were the only agents to which infants were exposed during the study period.*