

ASSOCIATION OF ACUTE KIDNEY INJURY WITH NEURODEVELOPMENTAL OUTCOMES IN INFANTS UNDERGOING SURGERY FOR CONGENITAL HEART DISEASE.

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Background: Children with congenital heart disease (CHD) have higher rates of neurodevelopmental impairment compared to healthy children. Acute kidney injury (AKI) affects up to 60% of children after surgery for CHD. Kidney injury has been associated with lower academic achievement and worse neurodevelopmental outcomes (NDO). There are no data about the association of AKI with NDO in infants undergoing surgery for CHD. We hypothesize that infants undergoing surgery for CHD and associated post-operative AKI have worse NDO compared to those without post operative AKI.

Materials/Methods: We performed a retrospective cohort study of all patients who underwent CHD surgery in the 1st year of life at Texas Children's Hospital from 05/2014 to 11/2018 and were followed up with a Bayley Scales of Infant Development 3rd Edition (BSID-III) assessment at the Cardiac Developmental Outcomes Program clinic. BSID-III scores of less than or equal to 85 were considered delayed. AKI was classified using KDIGO creatinine criteria or prolonged peritoneal dialysis greater than 72hours. Data was analyzed using SPSS 22.0.

Results: One hundred and fifty patients (59% male) met inclusion criteria. Median age at index surgery was 13 days (IQR 7-60 days). Eighteen infants were in STAT category 1, 32 in category 2, 13 in category 3, 70 in category 4, and 17 in category 5. AKI was present in 63% (95/150) of patients after cardiac surgery. Demographic characteristics and STAT distribution were similar in patients with and without post-operative AKI. On NDO testing, cognitive delay was present in 38% (56/147), language delay in 44% (65/149), and motor delay in 27% (37/140). Motor delay was more frequent in patients with post-operative AKI compared to without post-operative AKI (34% delayed in AKI vs 17% in no AKI, $p = 0.04$). Frequencies of cognitive and language delay were similar in patients with and without post-operative AKI ($p=0.71$, $p=0.92$ respectively).

Conclusions: Post-operative AKI is associated with motor delay on NDO testing in infants undergoing CHD surgery. Further studies including prospective follow up will help better characterize this association.