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P396 -A single centre retrospective review of acute kidney injury in neonates with congenital diaphragmatic hernia

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Introduction:

Congenital diaphragmatic hernia (CDH) is a complex syndrome characterized by severe cardio-respiratory impairment within the neonatal period.

Affected infants are exposed to multiple potentially nephrotoxic factors, predisposing them to acute kidney injury (AKI) - which is associated with poorer outcomes in critically ill neonates.

Children who survive neonatal AKI are at risk of long-term renal complications (including chronic kidney disease and hypertension). Improved understanding and recognition of contributory factors for AKI in CDH may ameliorate prognostic outlook.

Aims:

We hypothesized that infants born with CDH have a high incidence of AKI. The purpose of this study was to investigate AKI prevalence within the neonatal period of infants with CDH and to identify variables which may potentiate subsequent renal failure.

Methods:

Retrospective review of patient health records within a CDH cohort (n = 55) treated at a regional neonatal surgical centre between 2011 and 2017.

AKI risk factors (nephrotoxic medication exposure, significant infection, requirement for ECMO support etc.), demographic data and outcome measures (duration of hospital stay, survival status) were documented.

Weekly minimum and maximum serum creatinine levels were recorded; we then identified whether there was a percentage increase (as bracketed below) from baseline creatinine measurements and compared results attained to modified international paediatric RIFLE criteria for AKI determination:

- Risk of renal dysfunction (> 25%)
- Injury to the kidney (> 50%)
- Failure or Loss of kidney function (> 75%)
- End-stage renal disease (< 10% normal renal activity)

Division into two further sub-groups occurred as follows: neonates who did not meet pRIFLE criteria / categorized as "Risk" were identified as having "No AKI"; whilst those assigned to the remaining categories (as defined above) met criteria for having developed "AKI".

Incomplete recording of urine output within our patient cohort prevented stratification of AKI based on this parameter.

Creatinine measurements within Week 1 of life were excluded to remove maternal creatinine bias.

Results:

55 CDH cases were identified; of whom 38% developed AKI (pRIFLE categories: Injury, Failure or Loss).

Inborn cases ($p = 0.044$), larger CDH defect (Type C / D; $p = 0.002$), patch repair ($p = 0.032$), administration of ECMO ($p = 0.004$) and exposure to certain medications (including vancomycin and steroids) were all significantly associated with AKI.

Hypertension was a highly significant variable ($p = 0.008$), with just 5.9% of the "No AKI" group demonstrating evidence of this versus 33.3% of the "AKI" classification.

AKI was strongly related to prolonged hospitalisation and patient non-survival ($p = 0.017$ and $p = 0.004$ respectively). No statistical correlations were found between AKI status and gentamicin prescription, UAC insertion or significant infection.

Conclusions:

- AKI is common in neonatal CDH and associated with adverse outcome
- Potentially modifiable risk factors for AKI development in CDH includes exposure to nephrotoxic medications (thus warranting increased pharmacological vigilance)
- Prevention and early recognition of AKI in CDH could ameliorate overall prognostic outlook (a 14% mortality rate was identified in neonates categorised as kidney Injury vs. 75% in those classified with renal Failure)