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Peritoneal dialysis in extremely and low birth weight infants: a pooled analysis of case reports

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Ioannis Bellos[1], Vasilios Karageorgiou[2]

[1]National and Kapodistrian University of Athens; [2]Imperial College London

Ioannis Bellos
Department of Hygiene, Epidemiology and Medical Statistics, ...

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We use this protocol and it's working

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Keywords: peritoneal, dialysis, low birth, newborn, neonate, infant,

1 Search strategy: Through a structured algorithm search, major databases will be searched from inception to 01 August 2020. The databases will be MEDLINE, Scopus, Web of science, clinicaltrials.gov and Google Scholar. Keywords provided, with ad hoc modification, will include: peritoneal dialysis, neonate, acute kidney injury, renal failure. After screening the titles and abstracts of all retrieved studies, only those deemed relevant will be accessed in full. Those fulfilling the eligibility criteria will be included in the study.

2 Eligibility criteria: Studies including neonates and infants aged <6 months that were diagnosed with AKI wil be eligible. The intervention of interest will be peritoneal dialysis (PD). It is anticipated that comparison groups will not be strictly balanced groups allocated to eg. dialysis through randomization, the comparisons will be between groups of PD but with differences in baseline characteristics. Outcomes of interest will be difference in survival, renal recovery and complications of PD between groups.

3 Outcomes and Effect Measures: Primary outcomes: Survival (defined as time to death from commencement of PD) and time to renal recovery will be estimated. For both these outcomes, hazard ratios (HR) for 1. EBW vs. LBW, 2. Sepsis vs. other groups will be reported. Secondary outcomes: The risk of 1) obstruction, 2) leakage at any point during PD will be estimated in patients with ELBW and VLBW. For these outcomes, risk ratios (RR) will be reported.

4 Data Analysis: Primary outcomes: Multivariable Cox regression was used for the primary outcomes []. Multivariable extension allows for correcting for confounders. In our case, lower gestational age and current weight have been associated both with birth weight and with decreased survival. Thus, they fulfill the criteria for confounding and were used as covariates in Cox models. Analyses were performed with the R package survival [https://cran.r-project.org/web/packages/survival/survival.pdf]. Secondary outcomes: Logistic regression was used, with obstruction and leakage treated as positive outcomes. Where there was no mention of such a complication, it was assumed that it did not occur. If co-occurring complications were reported, they were analyzed themselves as separate outcomes if data were adequate.

5 Subgroup Analyses: The analyses for the primary and secondary outcomes will be performed in subgroups stratifying by a) type of catheter used, b) a reported diagnosis of RDS.

6 Sensitivity Analyses: As it is expected that patients under PD treatment of longer duration are likely to be expressing patients with a disproportionately worse baseline severity of illness, it is anticipated that PD duration will not be equally allocated between participants with different severities. This phenomenon, referred to as confounding by indication, will be accounted for with propensity score matching (PSM). A further concern is the non-randomized design in all studies, implying residual confounding in other domains. The PSM approach also provides more reliable estimates in such settings. A logistic regression model will be fitted to calculate the predicted probability of

a patient being allocated to compared groups, in our case PD duration less or more than 5 hours. Covariates upon which balance is sought will be age, birth weight and etiology (sepsis/other). The output will be a matched in which primary and secondary outcome analyses will be repeated.