

Pediatric Drowning: Prognostic Parameters of Multiorgan Dysfunction

Colton J. Southard-Goebel¹, Daniel T. Cater², Courtney M. Rowan²

¹Indiana University School of Medicine, ²Indiana University School of Medicine, Department of Pediatrics

Background/Objective:

There are sparse data on the epidemiology of organ dysfunction in pediatric drowning and prognostic parameters are not well understood. The objective of our study was to investigate prognostic parameters and epidemiology of multiple organ dysfunction syndrome (MODS).

Methods:

This was a single center retrospective cohort study of drowning in patients 1 month to 25 years admitted to the pediatric intensive care unit at our institution from June 1, 2016-June 1, 2021. Organ dysfunction scores were assessed at distinct time points using Goldstein criteria for pediatric MODS. Risk factors for the development of MODS were then investigated. Inferential statistics were used to describe MODS. Logistic regression was used to determine the association of factors with the development of MODS at 24 hours.

Results:

Forty-eight patients were included. At 24 hours, 56.3% (n=27) had MODS which was associated with an increased risk for mortality (p=.002). There were no differences in demographics between those who developed MODS and those who did not. Of those who had MODS at 24 hours, 26% (n=7) had 2 organs involved, 41% (n=11) had 3 organs involved, 30% (n=8) had 4 dysfunctional organs and 1 child had 5 organs involved. Patients that developed MODS at 24 hours, had CPR prior to admission (p=0.038), lower body temperature on admission (p=0.049), and higher admission blood glucose (p=0.002). Adjusting for CPR and body temperature in a multivariable model, blood glucose ≥ 200 on admission was associated with development of MODS [OR 4.77 (95%CI: 1.13-20.137), p=0.033].

Conclusion:

Development of MODS in pediatric drowning is common and is associated with worse outcomes. Hyperglycemia on admission was identified as a risk factor for the development of MODS in this cohort.

Scientific/Clinical/Policy Impact and Implications:

Future study should address if tighter glycemic control in this at-risk patient population could lead to decreased MODS development.