Use of Low Molecular Weight Dextran In Gastroschisis Patients

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Introduction

Gastroschisis is a congenital abdominal wall defect which requires surgical intervention after birth. Common perioperative complications with bowel surgery include hemodynamic instability, capillary leak, and intravascular fluid shifts. Low molecular weight dextran (LMWD) is a colloid fluid (molecular weight of 40kDa) that has been described as a volume expander in shock and has shown improvement in microvascular circulation. However, there is limited literature describing the use of LMWD in neonates. Our objective was to describe our institution's use of LMWD as part of the perioperative management of gastroschisis patients.

Methods

We performed a retrospective chart review of all neonates with gastroschisis admitted to Rady Children's Hospital of San Diego from January 2012 to December 2015 who received LMWD. The medical records were reviewed and clinical markers were compared before and after LMWD administration.

Results

15 gastroschisis patients received LMWD during the study period. Mean urine output improved at 24 and 48 hours after LMWD infusion compared to the 24 hours prior to treatment. Additionally, there were improvements in base excess and creatinine. Patients requiring dopamine showed a decrease in dosage after receiving LMWD. No adverse events were associated with LMWD infusion.

Characteristics of Gastroschisis Infants Who Received LMWD

Total Number of Patients, n	15
Gestational Age, weeks *	35.9 ± 1.9
Birth Weight, grams *	2344 ± 512
Male, n (%)	6 (40%)
C-section, n (%)	12 (80%)
1 Minute Apgar *	6.2 ± 1.7
5 Minute Apgar *	7.9 ± 1.4
Patients on Dopamine Prior to LMWD, n (%)	5 (33%)

* Means ± SD

Clinical Markers Before and After LMWD

	24 Hours Prior to Dextran Infusion	24 Hours After Dextran Infusion	48 Hours After Dextran Infusion
Urine Output (mg/kg/hr)	2.3	5.3 *	4.8 *
Base Excess/ Deficit	-5.1	3.4 *	4.4 *
Creatinine	0.65	0.48 *	0.41 *
Dopamine (mcg/kg/min)	6.6	2.6 *	1.6 *

* Compared to 24 hours prior to LMWD infusion, p < 0.05

Conclusions

LMWD can be a potential adjunctive therapy in the management of gastroschisis. We observed significant improvement in markers of hemodynamic stability and intravascular perfusion in our subjects. A prospective randomized trial is needed to further elucidate the safety and efficacy of LMWD in this population.

References

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