The Effect of Antenatal Magnesium Sulphate Treatment on Feeding Intolerance of Preterm Infants

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Background: Maternal magnesium sulphate (MgSO₄) treatment was considered to have short and long term side effects besides the proven neuroprotective benefits in preterm infants. It has been hypothesized that maternal MgSO₄ treatment may result with increased feeding intolerance by decreasing gastrointestinal motility. The aim of this study was to compare the frequency of feeding intolerance of the babies born to women who received MgSO₄ treatment for neuroprotective purpose with others.

Method: In this observational, prospective, cohort study, ≤32 gestational weeks infants were included. Patients were divided into two groups according to whether their mothers had received antenatal MgSO₄ for neuroprotection. The primary outcome was feeding intolerance during the first two weeks of life. Secondary outcomes included spontaneous intestinal perforation (SIP), necrotizing enterocolitis (NEC) and total enteral feeding day. Feeding intolerance was defined as a previous feeding volume of > 50% gastric residual volume and abdominal distension and/or vomiting or cessation of enteral feeding at least 8 hours.

Results: 268 infants were evaluated in the study. While 128 patients (47%) had antenatal MgSO₄, 140 (52%) did not. The mean (SD) birth weights and gestational weeks of patients receiving and not receiving MgSO₄ were 1081 ± 322 g and 1311 ± 438 g, 28.3 ± 2.35 and 29.3 ± 2.4 weeks, respectively. Feeding intolerance was present in 52.5% of the patients treated with MgSO₄ and 27.9% in the other group (p <0.01). The mean day of complete enteral feeding was 15.1 ± 6.3 and 12.5 ± 8.3 in the treated and not treated groups, respectively (p = 0.01). Maternal MgSO₄ was found to be an independent risk factor for feeding intolerance (OR 2.15 CI 1.25-3.7).

Conclusion: Antenatal neuroprotective MgSO₄ treatment was demonstrated to be associated with higher frequency of feeding intolerance in preterm infants. Although the pathophysiology is unclear, neuroprotective MgSO₄ treatment may cause impairment of gastrointestinal motility.

References

1. Belden MK, Gnadt S, Ebert A. Effects of maternal magnesium sulfate treatment on neonatal feeding tolerance. J Pediatr Pharmacol Ther 2017 Mar-Apr;22(2):112-117.
2. Doyle LW, Crowther CA, Middleton P et al. Magnesium sulphate for woman at risk of preterm birth for neuroprotection of the fetus. Cochrane Database Syst Rev 2009 Jan 21;(1):CD004661.

Table: Demographic and clinical characteristics

	Antenatal MgSO ₄ (+) n=128	Antenatal MgSO ₄ (-) n=140	p
Gestational age, weeks ^a	28.3±2.35	29.3±2.4	<0.01
Birth weight, g ^a	1081±322	1311±438	<0.01
Male gender, n %	62 (49)	70 (50)	0.541
C/S, n %	93 (73)	100 (72)	0.509
APGAR 5 ^a	7±1	7±1	0.125
Spontaneous intestinal perforation, n %	6 (5)	7 (5)	0.617
Necrotizing enterocolitis (stage 2-3), n %	14 (11)	12 (9)	0.845
Day of full enteral feeding, day ^a	15.1±6.3	12.5±8.3	0.477
Feeding intolerance, n %	67 (53)	40 (29)	0.016
Mortality, n%	14 (11)	22 (16)	0.323