ANTENATAL MAGNESIUM SULFATE ENHANCES INFLAMMATORY EFFECTS OF LIPOPOLYSACCHARIDES IN A RAT MODEL.

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Introduction: Antenatal magnesium sulfate (MgSO₄) is recommended for fetal neuroprotection. Anti-inflammatory effects have been suggested.

Objective: The aim of this animal study was to assess the neuroprotective effect of in utero exposure to MgSO₄, under inflammatory condition.

Study design: Pregnant Sprague-Dawley rats (n=19) received 4 intra-peritoneal (IP) injections of lipopolysaccharides (LPS 200 μg/kg), combined with MgSO₄ (50 mg/kg, n=9) or saline solution (SS, n=10). ELISA analyses were performed on maternal plasma to measure interleukin-6 (IL-6) concentrations. In the second set of experiments, animals (n=8) received a single IP injection: (LPS 500 μg/kg + MgSO₄ + SS, n=4) or (LPS 500 μg/kg + MgSO₄ + IL-6 12 μg/kg, n=4). Behaviour and motor functions of surviving pups (n=212) were analyzed by the open field and the rotarod tests. Statistical analyses were performed using Mann-Whitney and Kruskal-Wallis tests.

Results: Pups’ average weight at postnatal day (P) 25 was 75.77 g and 89.08 g in MgSO₄ and control groups, respectively (p=0.02). Pups in MgSO₄ group have traveled a shorter distance in the open field and have shown reduced motor balance and coordination (p<0.01) in the rotarod test. IL-6 maternal expression level was decreased by MgSO₄.
treatment. Average weight of pups receiving (LPS + MgSO\textsubscript{4} + IL-6) was 92.26 g at P25, compared to 75.86 g in (LPS + MgSO\textsubscript{4} + SS) group (p=0.05).

**Conclusion:** In our inflammatory model of pregnant rats, MgSO\textsubscript{4} induces pups growth retardation and motor deficits among the survivors, which might partly be related to a lower IL-6 circulating concentration.