IS-15 The Effect of Fetal Stabilization using Morphine Hydrochloride on Neonatal Rats

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We previously showed that fetal stabilization (FS) with the administration of morphine hydrochloride to the fetus via the mother’s placenta could improve the prognosis of severe congenital diaphragmatic hernia patients. The aim of this study is to elucidate the effect of FS with morphine in normal neonatal rats. Pregnant S-D rats were treated by protocols on day 21 of gestation. In the FS-group, they received morphine via the placenta by means of maternal intra-abdominal injection before undergoing a caesarean section. In the control group (C-group), they received no morphine during the perinatal period. All neonatal rats were managed under mechanical ventilation for 4 hours. We collected the blood samples at birth and at 4 hours after birth in both groups and then the serum TNF-α, IL-6, IL-10 concentrations and the TNF-α concentration in BALF were measured. The specimens obtained from the right lung were immunohistochemically stained with anti-mouse TNF-α polyclonal antibody. The levels of serum TNF-α at birth and IL-6 at 4 hours after birth in the FS-group decreased, in comparison to those in the C-group. At birth in the FS-group, the TNF-α concentration in BALF tended to be lower than that in the C-group. TNF-α positive cells were identified in the bronchial muscular layers, arterial media and externa in both groups. The staining intensity in the FS-group was weaker than that in the C-group. FS reduced the production of inflammatory cytokines on neonatal rats. These effects may beneficially reduce the occurrence of PPHN which is induced by stress in CDH patients.