2-P2-22

Poster Sessions

Prenatal glucocorticoid administration accelerates glomeruli and renal tubules development in the fetal rats.

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Prenatal glucocorticoid (GC) administration has shown to develop the pulmonary circulation in the neonate. However, the effects of the kidney functions remains unknown. This study aimed to investigate whether prenatal GC administration is associated with fetal kidney development in the preterm model rats.

Dexamethasone (DEX) was administered to pregnant Wistar rats for 2 days on day-17 and day-18 or day-19 and day-20 of gestation, and the kidney tissues of day-19- and day-21 fetuses and 1-day-old neonates were analyzed. The expression of kidney development-related markers (alpha-SMA, aquaporin1 and 2) were evaluated by immunohistochemistry and glomeruli and tubules numbers were calculated by H-E staining in the fetal and neonatal rats with prenatal GC.

The expression of kidney development-related markers (alpha-SMA, aquaporin1 and 2) were evaluated by immunohistochemistry and glomeruli and tubules numbers in the kidney tissue were counted in the fetal and neonatal rats with prenatal GC. In non-treated group, a kidney size in the neonate was significantly increased compared with that of the fetus. DEX did not change a kidney size in the fetal and the neonate. The glomerular number was not changed by DEX, but tubular number was significantly increased in day 19 and day-21 fetal kidney tissues.

The expression of alpha-SMA which decrease with growth of mesangial cells was significantly decreased in the fetuses with DEX. Furthermore, DEX increased the expression of aquaporin 1 and 2 in tubuli of the fetal kidney.

In conclusion, these results indicate that prenatal GC administration may contribute to the development of glomeruli and renal tubules in the immature fetal kidney.