OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference and Exhibition on
Neurology & Therapeutics
June 17-19, 2013 Hilton Chicago/Northbrook, Chicago, USA

The influence of antenatal taurine on Rho-ROCK signal pathway in fetal rat brain with intrauterine growth restriction

JingLiu, Xiao-FengWang, YingLiu and Hua-Wei Wang
General Hospital of Beijing Military Command, China

Objective: To explore the influence of antenatal taurine supplementation on the expression of key signaling molecule of Rho-ROCK pathway in fetal rat brain with intrauterine growth restriction(IUGR), and to understand whether or not taurine can improve neuron regeneration in IUGR fetal rats by this signaling pathway.

Methods: Thirtypregnant rats were randomly divided into three groups: control, IUGR model (model) and IUGR+antenataltaurinesupplements (taurine group). Taurine was added to the diet of taurine group at a dose of 300 mg/kg.d from 12 days after conception until natural delivery. The level of mRNA expressions ofRas homolog gene A (RhoA), Rho-associated coiled coil-forming protein kinase 2 (ROCK2) and proliferating cell nuclear antigen (PCNA) were detected by Real time-PCR. The PCNA positive cell counts were detected by immunohistochemistry. The data were analyzed by SPSS16.0 software.

Results:

1. The level of RhoA, ROCK2 and PCNA-mRNA in the model, taurine and control group were respectively:
   - RhoA-mRNA 2.678 (1.456~4.925), 1.589 (0.77~3.281) and 0.000 (0.585~1.710) ($p<0.05$)
   - ROCK2 mRNA 2.141 (1.522~2.864), 1.487 (1.187~1.862) and 1.000 (0.773~1.293) ($p<0.05$)
   - PCNA-mRNA 1.710 (1.08~2.708), 3.265 (2.120~5.028) and 1.000 (0.638~1.567) ($p<0.05$)
2. The PCNA positive cell counts in control, IUGR model and taurine groups were respectively 11.3±3.18, 22.24±6.17 and 77.8±14.6 ($p<0.05$).

Conclusion: Antenatal supplementation of taurine can inhibit the expression of key signaling molecule of Rho-ROCK pathway and can improve the expression of PCNA in IUGR fetal brain, which provides a further theoretical basis for the application of antenatal taurine to improve IUGR fetal brain development.

Key words: Intrauterine growth restriction, taurine, Rho-ROCK signal pathway, proliferating cell nuclear antigen, embryo and rat

liujingbj@live.cn