



### The Effect of Maternal Stress on the Neural Apoptosis in the Neonate Rats

Fariba Karimzadeh<sup>1,2\*</sup>, Azadeh Sajadian<sup>1</sup>, Zeinab Akbarnejad<sup>3</sup>

<sup>1</sup> Shefa Neuroscience Research Center, Khatam Alanbia Hospital, Tehran, Iran.

<sup>2</sup> Cellular and Molecular Research Center, Iran University of Medical Sciences, Tehran, Iran.

<sup>3</sup> Neuroscience Department, Kerman University of Medical Sciences, Kerman, Iran.

**Published: 1 Oct 2014**

#### Abstract

Young children with history of maternal stress during pregnancy suffer from several neurological and psychological disorders in the childhood. The purpose of this study was to investigate the effect of maternal stress during pregnancy on the neural apoptosis in the newborns. Pregnant Wistar rats were divided into control and stress groups. Stress was applied on the pregnant females from day 15 until delivery. Pregnant rats were acutely stressed for 45 minutes three times a day with noise and light. Five micrometer paraffin embedded sections were prepared from the brain of neonates. To visualize DNA fragmentation, terminal deoxynucleotidyl transferase-mediated dUTP nick end labelling (TUNEL) for staining DNA fragmentation after apoptotic cell death was performed. Apoptotic cells were counted in the dentate gyrus of neonates. The mean number of apoptotic cells increased in the neonates of stress group compared to control group in the dentate gyrus ( $P < 0.001$ ). Our findings showed that the maternal stress during pregnancy could lead to some brain structural related diseases.

**Keywords:** Maternal Stress, Dentate Gyrus, Apoptosis.

**\*Corresponding Author:** Fariba Karimzadeh

**Email:** fariba\_karimzade@yahoo.com