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Exposure to prenatal stress has deleterious effects on hippocampal function in a febrile seizure rat model

Lihle Qulu, Daniels W M and **Mabandla M V**
University of KwaZulu-Natal, South Africa

Prenatal stress has been shown to result in the development of a number of neurological disorders in the offspring. Most of these disorders are a result of an altered HPA axis resulting in higher than normal glucocorticoid levels in the affected neonate. This leaves the offspring prone to immune challenges. Therefore the aim of the present study was to investigate the effects of prenatal stress and febrile seizures on behavior and hippocampal function. Pregnant dams were exposed to restraint stress during the third trimester. Following birth, febrile seizures were induced in two week old pups using lipopolysaccharide and kainic acid. A week later, anxiety-like behavior and navigational ability was assessed. Trunk blood was used to measure basal corticosterone concentration and hippocampal tissue was collected and analyzed. Our results show that exposure to prenatal stress increased basal corticosterone concentration. Exposure to prenatal stress exacerbated anxiety-like behavior and impaired the rat's navigational ability. Exposure to prenatal stress resulted in reduced hippocampal mass that was exacerbated by febrile seizures. However, exposure to febrile seizures did not affect hippocampal mass in the absence of prenatal stress. This suggests that febrile seizures are exacerbated by exposure to early life stressors and this may lead to the development of neurological symptoms associated with a malfunctioning hippocampus.

Distributional relation of antimicrobial factors and mast cell and melanocyte in the gland of the external auditory canal

Yong Joo Yoon and **Jin Yoon**
Chonbuk National University, South Korea

Introduction: Antimicrobial factors and mast cells and melanocytes are closely related to the protection of the skin from a pathogenic insult. They detected in the body skin containing glands. The goal of this investigation was to identify the presence of melanocytes and mast cells, referring to the distribution of antimicrobial factors in the gland of the external auditory canal skin.

Material & Methods: Normal human external auditory canal skins were assessed for immunohistochemical evidence of mast cells and melanocyte and antimicrobial factors (hBD-1 and hBD-2). Immunoreactivity was detected using a standard avidin-biotin complex peroxidase method (Vectastain Universal Ellite ABC kit, Vector Laboratories).

Results: Mast cells were mainly observed in the ceruminous gland cell areas. Dendritic melanocytes were found in the subepithelial space. The positive staining of hBD-1 was most intense in the ceruminous gland regions.

Conclusion: These findings suggest that mast cells in the normal external auditory canal skin may somehow be involved in secretion of antimicrobial peptides in the ceruminous gland.