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Oral Presentation

Role of Adult Hippocampal Neurogenesis in Anxiety Disorders

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Abstract

Neurogenesis occurs throughout life in several regions of the brain. In this lecture, a new sight for the role of the dentate gyrus and adult hippocampal neurogenesis in anxiety disorders will be discussed. The region that has obtained the most attention for its involvement in the neurogenesis of affective and anxiety disorders are the hippocampal and dentate gyrus. Evidence strongly suggests that adult-generated hippocampal neurons are involved in the hippocampal circuitry via projections in the mossy fiber pathway, and contribute to hippocampal functions relevant to the mood and memory functions. Based on these initial observations, adult hippocampal neurogenesis has been shown to be required for some, but not all, of the behavioral effects of anti-depressants. It has been reported that chronic anti-depressant treatment increased subgranular zone proliferation and neurogenesis. Regard to this background, this finding generalized to different classes of anti-depressants pharmacotherapeutics. However, one important remaining question is whether increasing levels of adult hippocampal neurogenesis is sufficient for anti-depressant-like effects on behavior. In a recent study, it has been shown that neural stem cells in the adult mammalian brain provide a resource that may be harnessed to treat various disorders. On the other hand, it has been proposed the development of new pro-neurogenic compounds may therefore have therapeutic potential for patients who display pattern separation deficits, such as post-traumatic stress and panic disorders. In conclusion, novel strategy to treat anxiety disorders may be achieved by enhancement of adult hippocampal neurogenesis.

Keywords: Neurogenesis, Dentate gyrus, Anxiety disorders

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