BioSpectrum the business of Bio & Health Sciences ASIA EDITION

Astellas, FHU study finds neurogenesis deficits in schizophrenics

26 July 2012 | News | By BioSpectrum Bureau

Collaborative research by Astellas and Japan university discovers neurogenesis deficits in schizophrenics

Singapore: A new research study has found deficits in the maturation steps of neurogenesis within the hippocampus of patients with schizophrenia or bipolar disorder. The research was conducted by Astellas Research Institute of America (ARIA) in collaboration with Dr Tsuyoshi Miyakawa of the Institute for Comprehensive Medical Science, Fujita Health University, and Stanley Medical Research Institute (SMRI). The study has been published in Translational Psychiatry.

Previous studies have found strong links between hippocampal malfunction and psychiatric disorders, including schizophrenia and bipolar disorder. Dr Miyakawa's research group at Fujita Health University reported that a subgroup of gene-manipulated mouse mutants showed not only behavioral deficits reminiscent of patients with psychiatric disorders, including cognitive deficits and social withdrawal, but also deficits in maturation of newly-born neurons in the hippocampus.

Specifically, mutant mice have more immature neurons (expressing protein marker Calretinin) and less mature neurons (expressing protein marker Calbindin) in their hippocampal dentate gyrus, resulting in alternations of neuronal electrophysiological properties and malfunction of hippocampal neural circuit. This phenomena, referred to as an immature dentate gyrus (iDG), may underlie behavioral deficits observed in these mutants.

Building on the findings of the Miyakawa group, scientists at ARIA examined the hippocampi from four groups (schizophrenia, bipolar disorder, depression and healthy control) of postmortem brain for the hallmarks of iDG. They discovered that the immature neuronal marker Calretinin was significantly increased in both schizophrenia and bipolar disorder groups and

mature neuronal marker Calbindin show a trend toward decrease in bipolar disorder patients.

Calretinin expression levels were positively correlated with patients' clinical data, namely, presence of psychosis and suicide as a cause of death. These findings suggest a possibility that drugs that ameliorate this iDG phenotypes may become a truly innovative approach to cure psychiatric disorders, such as schizophrenia and bipolar disorder.