

Role of oxidative stress in autism disorder found

08 July 2013 | News | By BioSpectrum Bureau

Researchers find role of oxidative stress in autism disorder



Singapore: In an effort to explore biological influences on the varying appearance of autism spectrum disorder (ASD), Dr Pat Levitt of Saban Research Institute of Children's Hospital Los Angeles, measured a blood chemical that indicates oxidative stress levels in autistic children with gastrointestinal disturbances (GID). This commonly co-occurring medical condition typically presents as diarrhea, constipation or reflux.

The significantly elevated amount of oxidative stress in children co-affected with ASD and GID is indicative of metabolic dysfunction and may be an underlying cause of the more severe effects of autism seen in this population. This study is the first to examine the levels of oxidative stress in children co-affected with ASD and GID.

"In this study, Dr Levitt has identified a possible biomarker for the severity of autism and medical symptoms in children, a finding that could provide a mechanism to monitor effectiveness of treatment," says Dr Brent Polk, director of The Saban Research Institute and chief of pediatrics at the University of Southern California and Children's Hospital Los Angeles. "With one in three families affected by neurodevelopmental or cognitive disorders, this finding could have a far-reaching impact. As a pediatric gastroenterologist, I am encouraged to see research that seeks to unravel these co-occurring medical conditions that can seriously impact a patient's quality of life," he added.

Metabolism is the body's way of converting nutrients into useable energy. As a byproduct of energy production, metabolic processes also produce dangerously unstable atoms and molecules, known as free radicals. Free radicals strip electrons

from nearby molecules in order to achieve stability, creating a string of more unstable molecules in the process. The production of free radicals is generally held in check by the body's supply of neutralizing antioxidants, and the damage to nearby cells is minimal. However, in cases of oxidative stress, the number of free radicals overwhelms the activity of antioxidants, and can interfere with cell functions. Previous research has associated oxidative stress with Alzheimer's disease, atherosclerosis, heart failure, chronic fatigue syndrome and the general aging process.

In this study, Levitt and colleagues from the Keck School of Medicine at the University of Southern California and Vanderbilt University, measured blood levels of IsoP, the gold-standard indicator of oxidative stress, in four groups of children-those with only ASD, only GID, co-affected by both ASD and GID and a control population who did not show symptoms of either condition. IsoP levels were found to be elevated in all three clinical groups, but were significantly higher in the children who were co-affected.

"Clinical and behavioral interventions currently used to help treat ASD focus on the severity of the symptoms and not on the underlying cause," said Pat Levitt, PhD. "By understanding the impact of oxidative stress on the severity of medical and autism symptoms, we will eventually be able to individualize therapies in order to achieve the best possible outcomes for children with ASD."