S10: MAJOR DEPRESSION IS AN INFLAMMATORY DISORDER

SYMPOSIUM ABSTRACT:
There is now evidence that depression is an inflammatory disorder as indicated by increased levels of pro-inflammatory cytokines, e.g. interleukin-1β (IL-1β), IL-6, and tumor necrosis factor-α (TNFα), and increased plasma concentrations of acute phase proteins, like haptoglobin. Cell-mediated immune activation is indicated by T cell activation, including increased production of interferon-γ (IFNγ) and IL-12; and glucocorticoid resistance in immune cells.

Depression is also accompanied by an induction of oxidative and nitrosative stress (O&NS) pathways and increased damage to fatty acids, DNA and proteins by oxidation and nitrination processes and reduced levels of antioxidants, e.g. zinc and Co-enzyme Q10.

The mechanistic explanations of how these inflammatory and O&NS pathways may cause depression are: pro-inflammatory cytokines, like IL-1β, IL-6, and TNFα, cause depressive behaviour through induction of central neuroinflammation; decreased levels of antioxidants and antioxidant enzymes may cause a greater inflammatory responsivity; cell-mediated immune activation with increased production of IFNγ and O&NS induce indoleamine dioxygenase (IDO) and consequently cause lower levels of tryptophan, the precursor of serotonin, and increased levels of the neurotoxic tryptophan catabolites (TRYCATs); lowered tryptophan and serotonin and increased levels of some TRYCATs are associated with the development of depressive symptoms; O&NS may contribute to depressive symptoms through damage to membrane ω3 PUFAs, the phosphatidylinositol pathway, and damage to DNA and mitochondria. Increased levels of pro-inflammatory cytokines, some TRYCATs, and O&NS may cause neurodegenerative processes, induction of apoptosis pathways and lowered neurogenesis, which play a role in the pathophysiology of depression. Polymorphisms in immune- and O&NS-related genes are associated with susceptibility to major depression and antidepressant response. Anti-inflammatory drugs, like Cox-2 inhibitors and minocycline, and antioxidants, e.g. N-acetyl cysteine and zinc, have a clinical utility in the treatment of depression.

SYMPOSIUM CHAIRS:
To be announced

PRESENTATION TITLES & SPEAKERS:
Inflammatory biomarkers and polymorphisms in inflammation-related genes in depression
Julio Licinio, M.D., John Curtin School of Medical Research, The Australian National University, Canberra, Australia

Clinical potential of minocycline for major depression
T. Miyaoka, M.D. Department of Psychiatry, Shimane University, School of Medicine, Izumo, Japan
Inflammatory and oxidative stress pathways in depression
Michael Maes, Maes Clinics @ TRIA, Piyavate Hospital, Bangkok, Thailand

Pathways underlying neuroprogression in bipolar disorder: focus on inflammation, oxidative stress and neurotrophic factors
M. Berk, Barwon Health and The Geelong Clinic, Swanston Centre, Victoria, Australia

Cytokines-mediated inflammation and decreased neurogenesis in animal models of depression
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