Australian researchers find marker for disease severity in an MS-related childhood disease

23rd March, 2016

Dr Fabienne Brilot-Turville and Professor Russell

New Australian research funded by MS Research Australia, has investigated the changes which occur in the immune system in an MS-related disorder which occurs in children.
Their research indicates that a marker in the blood of some children may provide a useful tool to predict the severity of the disease and help guide treatment decisions.
The research was led by Dr Fabienne Brilot-Turville and Professor Russell Dale, from the Children's Hospital at Westmead, and concentrated on a group of children which were positive for the myelin oligodendrocyte glycoprotein (MOG) antibody. MOG antibodies attack MOG, which is a structural protein that makes up part of the insulating layer around nerve cells. It is this insulating layer, known as myelin, which is lost in MS and other demyelinating disorders. Dr Brilot-Turville and Dr Dale have developed a test for the MOG antibody in the blood.

Published in the journal *PLoS One*, the new research compared 10 children who were positive for the MOG antibody with 9 children who were negative and also a group of neurologically healthy control individuals. They measured a range of immune signaling molecules in their cerebrospinal fluid, which is the fluid which circulates in the brain and spinal cord.
The researchers found that the children positive for the MOG antibody had higher levels of immune signaling molecules compared to the other two groups. In particular, signaling molecules related to two types of immune cells known as B cells and neutrophils were elevated. Signaling molecules related to Th17 cells were also increased. Th17 cells are thought to be a primary immune cell which causes damage in MS and other autoimmune disorders. This group of children also had more lesions seen on magnetic resonance imaging, more relapses and more neurological deficits when they were followed up in the longer term.

This research implies that the immune system changes in the MOG positive group are more pronounced. The research suggests that the presence of the MOG antibody could help guide a more aggressive early treatment strategy to suppress the immune system in these patients. These findings will improve the ability to monitor inflammation and track treatment responses in these children.

Dr Brilot-Turville and Professor Dale also recently co-authored a review article in the prestigious journal Autoimmunity Reviews on the role of the MOG antibody in demyelinating disorders in both adults and children. Dr Brilot-Turville is currently being funded by MS Research Australia for a project investigating the role of the MOG antibody in optic neuritis, a disorder where demyelination is localised to the optic nerve which results in disturbed visual function and possibly blindness.