162 EFFECT OF TYSABRI AND AQP4-IGG ON AN IN-VITRO MODEL OF BBB

Conor McQuaid,[1] Anu Jacob,[2] Adjanie Patabendige[1]. [1]*The University of Liverpool;* [2]*The Walton Centre*

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Background Neuromyelitis Optica (NMO) is an inflammatory, astrocytopathic, demyelinating disease of the CNS mediated by anti AQP4-IgG that targets the AQP4 protein, the dominant water channel on astrocyte foot processes at the blood brain barrier (BBB). Natalizimumab (NTZ, Tysabri) prevents migration of activated T lymphocytes across the BBB and is effective in preventing inflammation in MS. However, for unknown reasons, NTZ worsens NMO, precipitating relapses. We explored the effect of NTZ on a model of BBB.

Methods Using an in-vitro culture model of BBB (Human Brain Endothelial Cells (HBEC) and Human Astrocytes) tightness of HBEC layer was measured using Trans-Endothelial Electrical Resistance (TEER).

Results Addition of NTZ to the model caused TEER values to reduce significantly compared to control. Addition of AQP4-IgG and NTZ caused further significant reduction of TEER. Addition of just the AQP4-IgG did not have any effect.

Conclusion NTZ apparently lowers surrogate measures of BBB integrity in the presence of AQP4-IgG. Whether this in vitro effect translates to easier access of AQP4-IgG to the AQP4 in-vivo or predisposes to attacks is uncertain and is being explored.