## 124 THE BBB IN ENCEPHALITIS: INFLAMMATION & A ROLE FOR STEROIDS?

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Viral encephalitis remains a major cause of neurodisability across the globe. Virus entry across the blood brain barrier

(BBB) into the central nervous system is associated with marked inflammation, but whether this is amenable to treatment with corticosteroids is uncertain.

In Asia, Japanese encephalitis virus (JEV) remains a leading cause of encephalitis, despite recent successes with vaccination. Virus enters the brain across BBB, but how it does this is not known. We established a novel human BBB model using brain endothelial cells and primary astrocytes. We found that virus infected endothelial cells trigging an innate pro-inflammatory host mediator response, which opened up the BBB, facilitating further viral entry. Treatment with corticosteroid led to a significant reduction in the inflammatory response, and helped preserve BBB integrity.

In the UK, herpes simplex virus (HSV) is the most commonly diagnosed viral encephalitis. To study brain swelling in humans with HSV encephalitis, we examined retrospectively, acute changes in temporal lobe volume and oedema on MRI brain scans. Temporal lobe volume and oedema increased for patients who did not received corticosteroid treatment, but decreased for patients who had received corticosteroids.

The findings from the BBB model and imaging studies provide preliminary data supporting the "COrticosteroids in HErpes SImplex Virus Encephalitis" (COHESIVE) randomised controlled trial, due to start in 2014.