Epilepsy drug slows nerve damage in optic neuritis

28th January, 2016

Researchers from the UK have this week published results suggesting that a medication used to treat epilepsy may hold promise for preventing nerve damage and slowing the accumulation of disability in people with MS.

Published in the prestigious journal *The Lancet Neurology*, the researchers have studied phenytoin, a medication commonly used to reduce seizures in people with epilepsy. Led by Dr Rhian Raftopoulos and Dr Raju Kapoor from the University College London Institute of Neurology, this was a phase II clinical trial conducted across two hospitals in the UK. Phase II clinical trials are used to measure the safety and tolerability of new treatments and to identify preliminary evidence for effectiveness. This trial included 86 people experiencing early symptoms of acute optic neuritis, which is often an early sign of MS, who were randomly allocated to receive either phenytoin or placebo.

Optic neuritis results from a loss of the myelin sheath surrounding the optic nerve, resulting in damaged vision and over time can cause further degeneration of the nerve fibres in the retina and visual pathway. In this clinical trial, the researchers were testing whether phenytoin can prevent nerve fibre degeneration by monitoring any changes in the number of nerve fibres in the retina (retinal 'thickness').

After six months of treatment, the trial participants who received phenytoin had on average 30% less damage to the retinal nerve fibre layer, compared to those who received a placebo. The treatment was also deemed to be tolerable; of the 42 people receiving phenytoin, there were 5 serious adverse events including severe rash, compared to only two adverse events in the placebo group.

Earlier research from animal models of MS had suggested that phenytoin, which blocks sodium channels on the nerve cell surface, may have neuroprotective effects in reducing degeneration of nerve fibres. This trial provides the first evidence that this treatment may hold benefits for people with MS and offers an exciting glimpse into future avenues for preventing MS progression. However, further investigation in larger clinical trials in both optic neuritis and in relapsing MS is needed before phenytoin can be routinely used as a treatment option for MS.