News from the South Wales MS research team – 2019

Welcome to our annual newsletter which includes information on our recently published work as well as studies we're currently working on. Our research is based on data and samples from the 'Epidemiology of MS' project and the Welsh Neuroscience Research Tissue Bank. Many of you have contributed to these studies, so thank you to all our volunteers!

Epidemiology of MS Project

This ongoing longitudinal study began in 2006. Its aim is to find out how often MS and other neuroinflammatory disorders occur in the population, who is affected, what causes them, and how we can best treat them. To date over 1930 people are included in the study. The study collects information e.g. about relapses, physical disability and disease-modifying treatments through specialist MS clinics and questionnaires.

Welsh Neuroscience Research Tissue Bank (WNRTB)

Welsh Neuroscience Research TISSUE BANK

The WNRTB oversees the collection and analysis of samples (e.g. blood) for the 'Epidemiology of MS' study. The samples allow us to analyse DNA and biochemical markers of disease. If you have not already donated and would like to volunteer please contact wnrtb@cardiff.ac.uk.

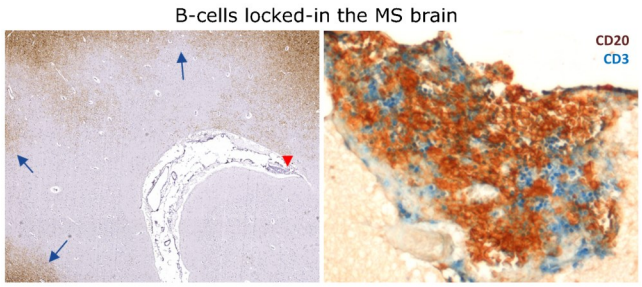
How common is benign MS? (Completed)

Benign MS is a term used to describe people with minimal disability despite a long disease duration. The exact definition of benign MS and how many people with MS may have a benign form is debated. This study performed a detailed clinical investigation of 60 patients with unlimited walking ability after a disease duration of over 15 years. Sixty-nine percent of these patients considered their disease benign but only nine of these patients fulfilled clinical criteria for truly benign MS. Impaired cognition and a negative impact of MS disease on employment were common reasons for not meeting benign MS criteria. Fatigue and mood disturbances were also observed in many of these patients. It was estimated that as few as 2.9% of the MS population have truly benign MS. See the published research paper at https://tinyurl.com/ydbu72az.

Disease modifying therapy in MS: clinical outcomes of escalation versus early intensive treatment strategies (Completed)

Disease-modifying treatments for MS differ considerably in their efficacy and safety. The drugs with the strongest effect are often associated with the most risks. There is uncertainty about how aggressively to treat MS in the early stages. Some people advocate hitting MS hard with early intensive treatment. Others suggest starting with a milder medication but escalating to a stronger drug if there is disease activity. This study reports on the outcomes of 592 people with MS treated in South Wales during the last 20 years, according to whether they had an early intensive or an escalation approach to their therapy. The data suggest that clinical outcomes appear more favourable in those who have early intensive therapy, in spite of the fact this is often viewed as a more risky option. This paper will be published in JAMA Neurology.

B-cell 'factories' in the MS brain (In progress)



There are now a number of very powerful drugs that help to reduce the symptoms of MS. Deciding which drug to give to which person and at what time is difficult however. These drugs target the immune system to slow or block the damage that white blood cells cause. B-cells are a type of white blood cell that are an important target of some MS drugs. We work closely with Dr Owain Howell and colleagues at Swansea University. They have shown that small 'B-cell factories' or lymph node-like structures can be found in the brains of some people very early in their MS. This is important as we know that these B-cell factories are associated with a more severe disease. Looking for this feature in people very early in their disease could help decide which is the most suitable drug to give a patient. Dr Howell is now keen to build on this work using samples from the WNRTB.

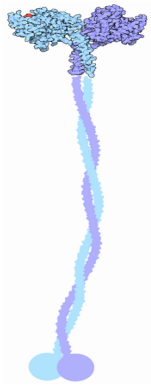
Brain physiology study (In progress)

Studies in MS suggest that measures of how the brain uses oxygen may signify the health of the brain. How the brain uses oxygen may also show ways that the brain is damaged in MS. These mechanisms could be targets for new therapies. Researchers from the Helen Durham Centre and Cardiff University Brain Research Imaging Centre (CUBRIC) are developing new MRI methods to investigate how inflammation in MS affects brain health and function. This includes looking at how well blood flows to different regions of the brain, how well oxygen (the main energy source) is used by brain cells, and how inflammation effects the brain's ability to adapt function.

Primary progressive MS study (In progress)

Primary progressive MS (PPMS) affects only about 15% of patients with MS. Currently there are no approved treatments for PPMS in the UK, although this may change in the near future. This study aims to characterise a large number of people with PPMS from South Wales at different points within their disease course. We are able to do this because we have built a very large comprehensive register of people with MS. We are interested in studying symptoms other than mobility, e.g. memory and concentration, mood, upper limb dexterity, and vision. Routine assessments of bladder and bowel function, mobility, and fatigue will also be undertaken. We will collect blood samples to add to our research biobank, and brain imaging. All this information will help to better predict the problems people with PPMS may develop in the future. This will help to improve care and determine who may respond to new treatments.

Investigating markers to predict MS onset and disease course (In progress)



MS is characterised by nerve cell loss in the brain. This loss is linked to disability and disease progression. Within a nerve cell, there are a series of 'transport rails' which are responsible for moving substances around the cell to maintain health and function. This process is disrupted in MS and it is believed there may be a genetic link. A collaboration with Dr Kelly Hares and Dr Alastair Wilkins (University of Bristol) is studying markers of nerve cell transport in spinal fluid samples of people with MS. They want to determine if these markers can predict disease onset and the likely disease course of people with MS. Importantly, they also aim to determine whether MS patients (with a specific genetic make-up) are more likely to have disrupted nerve cell transport which leads to nerve cell loss.

Want to get involved in the design of our research?
If you would like to be involved in the design and direction of our research in Cardiff, we are looking for people affected by MS to engage with us through focus groups & questionnaires. Please contact us at msdata@cardiff.ac.uk (or add a comment when you return your questionnaire) and we will send you a short form to complete.

BRAIN Repair & Intracranial Neurotherapeutics
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