



Supporting Patients through Education & Research

Scientific Summary - Development of anti-TIF1 alpha and beta ELISAs / Development of laboratory tests for novel myositis biomarkers - Maria Edwards

Myositis is characterised by the production of autoantibodies; the different antibody types correlate to the different subsets and progressions of the disease. Recently, autoantibodies against TIF1- γ have been identified as the most frequent antibody subtype within the sera of cancer-associated dermatomyositis patients. Preliminary findings also show that, in a small subset of myositis patients, anti-TIF1- α and anti-TIF1- β antibodies are produced.

This study investigated the preliminary result by developing and optimising an ELISA assay and tested large cohorts of myositis serum samples for the prevalence of the TIF1 alpha and beta autoantibodies. The study also aimed to identify any correlations between the types of antibodies within the sera and the varying progressions and severity of the disease.

The Western blot assay was used to identify strongly positive patients for the TIF1 alpha and beta autoantibodies. The sera were then used as the positive controls on the ELISA plates, in order to create calibration curves and to optimise the test. We altered the incubation times and temperatures for both the primary and secondary antibodies and also trialled a range of different blocking agents and blocking times on the ELISA plate. After finding optimal conditions, we then found the cut-off point. A large repository of sera was then tested on the ELISA plate and we found 11 possible patients who had antibodies against TIF1-alpha and 3 possible patients positive for anti-TIF1-beta autoantibodies.

Further studies will screen an even larger cohort of adult and juvenile myositis patients and other patients with anti-TIF1- γ antibodies, such as those with cancer and juvenile lipodystrophy. The results from this will be analysed in order to determine whether the presence of certain antibody biomarkers are associated with a particular developments of the disease. This will hopefully aid in the prognosis and treatment of myositis.

Future Career Plans - The BIRD summer studentship has been an invaluable opportunity to enhance my laboratory skills. From planning and carrying out experiments to problem solving and analysing results, the project has helped me gain knowledge and confidence in all aspects of research. I will continue to utilise and practise these skills in my final year research project at university. In addition, the studentship has helped confirm that I would thoroughly enjoy a career in research. I now wish to start a master's course or PhD in immunology after finishing my biomedical science degree, with the desire of contributing to the amazing research within the field of autoimmune diseases.