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Supporting Patients through Education & Research

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

Myositis is an inflammatory disease caused by the degeneration of muscle and/or skin cells. The disease is hallmarked by the production of autoantibodies which target proteins within the patients' skin, blood vessel or muscle cells. It has been discovered that myositis patients with certain autoantibodies develop particular disorders with differing severity. For instance, patients with autoantibodies that target the TIF1 protein tend to develop cancer-associated dermatomyositis. Currently, autoantibodies against the protein TIF1-gamma have been identified as the most common antibody within blood samples of cancer-associated dermatomyositis patients. There have also been findings that some patients have autoantibodies against the TIF1-alpha and beta proteins, although, these antibodies are much rarer. However, it is unclear how many myositis patients have autoantibodies against the TIF1-alpha and beta proteins and whether patients with these antibodies differ in severity or development of the disease.

This study developed and improved testing methods for detecting TIF1-alpha and beta autoantibodies. The optimised tests were then used to screen a large cohort of blood samples and found 11 possible patients who had antibodies against TIF1-alpha and 3 possible patients positive for anti-TIF1-beta autoantibodies.

The next objective is to use this test to screen an even larger cohort of myositis patients and identify any correlations between the variable types of antibodies in the blood samples and the different progressions of the disease. This research will hopefully help clinicians predict the development of the individuals' disease and aid in the selection of a suitable treatment for the patient.I have been successful in optimising experimental techniques used in the past to identify autoantibodies in different rheumatological diseases that we think have similar characteristics to the JIA autoantibody. This has allowed us to use the same technique on blood samples from JIA patients but unfortunately this has not allowed us to identify the JIA autoantibody. There are several reasons why this type of experiment may not work and we now plan to these reasons to adapt the technique further and/or choose different experimental strategies.

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.