Developing a blood test to monitor ependymoma treatment and follow-up

Project title: Minimal residual disease detection of ependymoma by microRNA biomarker profile evaluation as part of SIOP Ependymoma II trial

Lead researcher: Professor Richard Grundy, University of Nottingham

Project Stage: Ongoing (started January 2018, planned end June 2023)

Funded by: Edie's Butterfly Appeal

ABOUT THE PROJECT

At the moment, doctors cannot detect childhood brain tumours which are in very early stages. Therefore, it is hard to know at the end of treatment whether the tumour had been completely killed and there is no way to detect early relapses.

In childhood leukaemia, researchers have found a way to measure early response to treatment by measuring small amounts of the leukaemia signature in the blood, otherwise known as the 'minimal residual disease'. By taking repeated measurements, doctors can see whether the amount of leukaemia signatures in the blood remains low or is increasing, which would indicate an early stage of relapse. However, such advances have not yet been applied to childhood brain tumours and this is the main purpose of this research project.

The research team at the University of Nottingham, led by Dr Richard Grundy, hopes to find specific 'microRNA' markers that can represent amounts of ependymoma. MicroRNAs which are short sequences of molecules that are found in the blood and the fluid surrounding the brain at diagnosis. These microRNA biomarkers can then be monitored throughout treatment and in patient follow-up. The researchers need to find the best microRNAs that are specific to ependymoma and can show how the tumour is responding to treatment. Once they have found a microRNA marker, they will look at stored samples of blood and fluid to see if this signal can be detected and correctly represents the patient's clinical record (for example, what stage of the disease the sample was collected at).

This study is being conducted alongside a clinical trial, which means that the team will know exactly what treatments each child received, making it easier to validate the analysis of the blood and fluid samples. Professor Richard Grundy hopes that this will help build up a profile, or a molecular fingerprint, for the detection of ependymoma at various stages of the presentation, treatment and follow-up.

CCLG RESEARCH PROJECT UPDATE

PROGRESS

The researchers are struggling to collect enough patient samples for the research but can extend the project as necessary until enough samples are collected and they can start their analysis.

They have already found what miRNAs should be most common in ependymoma and will compare this to their data from the collected samples.

WHAT'S NEXT?

The research team are applying elsewhere for five years additional funding for this project.

Edie's Butterfly Appeal

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