Discovering what causes Ewing sarcoma to spread

Project title: Identifying molecular drivers of disease progression in Ewing sarcoma

Lead researcher: Prof Matthew Allen, University of Cambridge

Project Stage: Complete (February 2020)

Funded by: Kieran Maxwell Legacy

ABOUT THE PROJECT

Ewing sarcoma is a form of bone cancer that is normally seen in children and young people. Even with modern treatments, there is a high risk of the disease spreading to the lungs, liver and brain. This is called metastasis and has serious consequences, such as the cancer becoming very difficult to treat. If doctors could stop the disease spreading, it mean that children with Ewing sarcoma could live longer and have a better quality of life.

Professor Matthew Allen, and his team at the University of Cambridge, wants to find genes that are linked to metastasis. This project will look for these genes, and then find out whether they can predict if the cancer will spread. Using their findings, Professor Matthew Allen wants to create a test that will show the risk of a patient's Ewing sarcoma spreading to other parts of the body. His team will then use donated tumour samples from real patients at the point of diagnosis to see whether the test can accurately predict how the patient's Ewing sarcoma progressed.

RESULTS

The research team found 124 genes that were different in lung tumours (which had spread from the initial tumour) compared to bone tumours. They then narrowed it down to five genes, which they believe are most likely to be truly related with metastasis. After searching genetic databases, Professor Matthew Allen found that two genes were linked to decreased survival.

Unfortunately, the team were unable to get support externally to develop the test as planned. There were also significant delays due to COVID-19, as the researchers had difficulty getting hold of the patient tumour samples during 2020.

Professor Matthew Allen hopes that the findings from this project could be used alongside a clinical trial in the future to further test whether they can predict the cancer spreading. Longer term, the genes identified could be assessed as targets for treatments to fight metastasis.

WHAT'S NEXT?

The researchers plan to submit a further grant proposal to that will find out how the identified genes work in Ewing sarcoma, and why this leads to metastasis. They believe that stopping the gene from working could change the cancer cells, making them less likely to spread. By understanding the genes and associated mechanisms driving metastasis in this model, Professor Matthew Allen hopes to show that the genes could be used to create targeted treatments for Ewing sarcoma.

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