

Lay Summary

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A novel radioimmunotherapy approach for the treatment of recurrent medulloblastoma

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Medulloblastomas are the most common cancerous brain tumours in children, which mostly affect younger children and infants. Group3 medulloblastomas have the ability to spread through the brain and spinal cord. This spread is called metastases. The overall survival of group3 medulloblastomas depends heavily on whether the tumour has spread by the time it has been diagnosed. Traditional treatments are made up of standard, aggressive therapies including surgery, radiotherapy (in children aged 3 and above) and high-dose chemotherapy. This means that many children end up with life-threatening side-effects. Recurrent medulloblastoma tumours are always fatal, when the tumour recurs, surgery can cause a high rate of injury and distress, and so is often not performed. The two major obstacles for medulloblastoma treatment are the toxicity of traditional treatments, and the poor prognosis of recurrent disease.

Immunotherapy is a cancer treatment which uses the patient's own immune system to fight the disease. Chimeric antigen receptor T-cells (CARTs) are a branch of immunotherapy which involves reprogramming the patient's immune cells to fight a specific type of cancer. My own recent research has shown CARTs are a successful therapy against two different types of paediatric brain tumours, including medulloblastoma. We have identified a new potential therapeutic target for medulloblastoma. To understand better what role this protein has in primary and recurrent medulloblastoma we want to investigate tumour specimens from patients who have had medulloblastoma relapse. From these studies we expect to obtain a better understanding of this protein target as a therapy for medulloblastoma.