Study finds biological clue in brain tumour development

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(PhysOrg.com) -- Scientists at The University of Nottingham have uncovered a vital new biological clue that could lead to more effective treatments for a children's brain tumour that currently kills more than 60 per cent of young sufferers.

Clinician -scientists at the University's Children's Brain Tumour Research Centre, working on behalf of the Children's Cancer and Leukaemia Group (CCLG), have studied the role of the WNT biological pathway in central nervous system primitive neuroectodermal tumours (CNS PNET), a type of brain tumour that predominantly occurs in children and presently has a very poor prognosis.

In a paper published in the British Journal of Cancer, they have shown that in over one-third of cases, the pathway is 'activated', suggesting that it plays a role in tumour development. The research also highlighted a link between WNT pathway activation and patient survival — patients who had a CNS PNET tumour that was activated survived for longer than those without pathway activation.

The reason for the link between WNT pathway activation and better patient prognosis is as yet unclear. It could be that these tumours represent a less aggressive subset or that pathway activation itself actually harms the tumour. However, the pathway could represent an important new target for the treatment of more effective drugs, with fewer side effects.

Senior author Professor Richard Grundy, from the Children's Brain Tumour Research Centre, said: “The principal aim of our research is to reduce the morbidity and mortality of children with central nervous system tumours through improved understanding of tumour biology. Following on from this, we need to translate this knowledge into effective new treatments for brain tumours through the development and assessment of accurately targeted treatments that will cause fewer side effects than conventional chemotherapy or radiotherapy and be more effective. The ultimate aim is to develop 'drugs' that target just the abnormal genes in cancer cells, rather than the current norm which involves the indiscriminate destruction of dividing cells which might be healthy or malignant. Overall, this is an important finding in a poorly understood, poor prognosis disease, which we hope, in time, will lead to the development of new treatments for CNS PNETs.

“We hope our findings will lead to a more detailed understanding of CNS PNETS, which is crucial if we are to ensure each child receives the most appropriate treatment for their disease and that we reduce the number of children in which their cancer recurs.”

In total, around 450 children and young adults under 18 years are diagnosed with a brain tumour each year in the UK. Overall, 60 per cent of children with the cancer in the UK can be successfully treated, but survival for CNS PNETs is less than 40 per cent.

More information: www.bjcancer.com

Provided by University of Nottingham (news : web)