Brain tumour cells killed by anti-nausea drug

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(Medical Xpress)—New research from the University of Adelaide has shown for the first time that the growth of brain tumours can be halted by a drug currently being used to help patients recover from the side effects of chemotherapy.

The discovery has been made during a study looking at the relationship between brain tumours and a peptide associated with inflammation in the brain, called "substance P".

Substance P is commonly released throughout the body by the nervous system, and contributes to tissue swelling following injury. In the brain, levels of substance P greatly increase after traumatic brain injury and stroke.

"Researchers have known for some time that levels of substance P are also greatly increased in different tumour types around the body," says Dr Elizabeth Harford-Wright, a postdoctoral fellow in the University's Adelaide Centre for Neuroscience Research.

"We wanted to know if these elevated levels of the peptide were also present in brain tumour cells, and if so, whether or not they were affecting tumour growth. Importantly, we wanted to see if we could stop tumour growth by blocking substance P."

Dr Harford-Wright found that levels of substance P were greatly increased in brain tumour tissue.

Knowing that substance P binds to a receptor called NK1, Dr Harford-Wright used an antagonist drug called Emend to stop substance P binding to the receptor. Emend is already used in cancer clinics to help patients with chemotherapy-induced nausea.

The results were startling.

"We were successful in blocking substance P from binding to the NK1 receptor, which resulted in a reduction in brain tumour growth - and it also caused cell death in the tumour cells," Dr Harford-Wright says.

"So preventing the actions of substance P from carrying out its role in brain tumours actually halted the growth of brain cancer.

"This is a very exciting result, and it offers further opportunities to study possible brain tumour treatments over the coming years."

Provided by University of Adelaide