Natural 'Brake' Keeps Neuroblastomas Benign

On March 15, 2021 / By TroyC

Researchers have found that a signal molecule produced by Schwann cells found in benign neuroblastomas acts as a natural 'brake' keeping them benign and preventing their uncontrolled growth. This also works on malignant neuroblastoma cultures.

While energising a tumour with a growth factor to halt it does not sound logical, with neuroblastomas the Schwann cells trigger the maturation of nerve cells and bring the growth to a halt.

Schwann cells produce a signalling molecule called epidermal growth factor like 8 (EGFL8). The researchers showed that EGFL8 stimulates the differentiation, or maturation, of neuroblastoma cells. "Until recently, we only knew that this protein existed, but its function was not known. We now for the first time know where EGFL8 is produced and how it acts," explained study author Sabine Taschner Mandl, PhD, head of the Tumor Biology Group at St. Anna Children's Cancer Research Institute. The study results also showed that high levels of EGFL8 were linked to improved survival rates in neuroblastoma patients.

"In cell cultures, we have demonstrated that Schwann cells as well as their secreted signaling molecules exert anti tumour effects, even in aggressive neuroblastoma cells. Thus, we are able to exploit a process that occurs naturally in benign neuroblastomas to stop the malignant ones," Sabine Taschner Mandl and her colleague Tamara Weiss, PhD, from the Medical University of Vienna, explained.

However, there is still much to be discovered about how the interplay of Schwann cells with the rest of the body; currently the researchers are examining how they interact with immune cells.

The study also uncovered a significant finding: that Schwann cells in benign neuroblastomas have a similar cellular status to those that support healing in injured peripheral nerves. Schwann cells in the tumour were found to express repair associated genes and demonstrated repair functions. "It is amazing that we have discovered a signalling molecule that plays a role in both tumour development of benign neuroblastomas and regeneration of injured nerves. Since EGFL8 stimulates the formation of nerve cell extensions, it could be of great importance for the treatment of injured nerve fibers", said Tamara Weiss.

Source: Medical Xpress

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Retinal Images Could Provide Stroke And Dementia Warning

On March 11, 2021 / By TroyC

In the future, images of the retina could warn of a person's increased risk of stroke and dementia, making it possible to take preventive measures.

These findings come from preliminary research to be presented at the American Stroke Association's International Stroke Conference 2021.

Retinopathy is damage to the retina from injury or disease, commonly associated with diabetes. People with severe retinopathy are more likely to have a diseased looking brain on magnetic resonance imaging (MRI). Retinal tissue has the highest consumption of oxygen in the body, and is the most vulnerable to oxidative stress. Most causes of retinopathy involve damage to the retinal and choroidal circulatory systems.

Study Lead Author Michelle P. Lin, MD., MPH, Neurologist at Mayo Clinic explained."The retina is a window to the brain. A retinal photo that shows a magnified look at the back of the eye, including the retina and optic nerve, is cheaper and faster to perform than an MRI, so we're wondering if it might be a good screening tool to see who could benefit from a referral to a neurologist for a brain MRI."

In addition to the ophthalmologist's office, retinal photos could be taken by a smartphone camera or via a smartphone adapter, Lin said.

Researchers explored the association of retinopathy with stroke, dementia, and the risk of death in 5543 adults who had participated in the annual US National Health and Nutrition Examination Surveys (NHANES) from 2005 to 2008. Interviews were conducted with the participants on a number of aspects of their medical history and health behaviours. Additionally, they received a retinal scan photo to look for signs of retinopathy.

Compared with participants not diagnosed with retinopathy, those with retinopathy were more than twice as likely to have had a stroke. They were also nearly 70% more