

Molecular imbalance linked to brain tumour seizures

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Researchers in France may have discovered why some patients with a type of brain tumour have epileptic seizures.

Their study, published in *Science Translational Medicine*, suggests that seizures in patients with glioma may be linked to an imbalance of chloride – which is involved in [nerve activity](#) – in certain brain cells.

Whether a patient has seizures is linked to how aggressive their tumour

is – with less aggressive cases being more prone to epilepsy as [tumour cells](#) slowly progress and alter brain tissue.

It is hoped that further research could explore treatments for glioma-linked epilepsy by controlling chloride levels in the brain.

Glioma develops from specialised brain cells known as 'glial cells' that usually help to keep brain [nerve cells](#) in place, providing support and protection to ensure correct brain function.

In the latest study, scientists from Sorbonne University studied brain tissue samples from 47 glioma patients and found that [nerve tissue](#) infiltrated by glioma cells behaves in similar ways to other forms of epilepsy.

Looking at the patient samples, the team found that a particular type of nerve cell – called a pyramidal cell – released excessive amounts of chloride from inside the cells when exposed to a molecule called GABA, which is also involved in transmitting [nerve signals](#).

GABA was released by other neighbouring nerve cells called 'interneurons'. And the researchers believe that the release of chloride through specialised molecular channels in the membrane of nerve cells, may be responsible for the seizures experienced in some glioma patients.

Dr Robin Grant, an expert in epilepsy and glioma from the Edinburgh Cancer Research UK Centre, who was not involved in the research, said that the channels may make good drug targets for further investigation, but a finer understanding of the involvement of other processes is still needed.

"This small study is interesting and shows that glioma-linked epilepsy, as with other types of epilepsy, may be connected to certain channels found

in the membranes of nerve cells.

"More research will be needed to understand the finer details of this process in glioma and whether these channels, along with other similar channels found in nerve cells, could be good targets for drugs to help control the condition."

More information: Pallud J, et al. (2014). "Cortical GABAergic excitation contributes to epileptic activities around human glioma," *Science Translational Medicine*, 6 (244) 244ra89-244ra89. DOI: [dx.doi.org/10.1126/scitranslmed.3008065](https://doi.org/10.1126/scitranslmed.3008065)

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