

Lay Summary

BRAIN UK Ref: 13/002

Investigating inflammation of the normal appearing brain in patients with low-grade glioma

Dr F Roncaroli, Imperial College, London

A brain tumour can be defined as a mass lesion that is composed mostly of abnormal cells that grow in the brain. The cells can come from the brain itself or from its coverings (primary brain tumours) or from other organs in the body, this latter being defined as secondary or metastatic brain tumours. Primary brain tumours can be benign or malignant while secondary tumours are always aggressive (www.brainstrust.org.uk). There are over a hundred types of primary brain tumour each of which shows different behaviour.

Gliomas are between the commonest types of brain tumour in adults. The way they spread in the normal brain and their growth varies from type to case. Astrocytomas and oligodendrogliomas account for the vast majority of gliomas and they typically invade the surrounding tissue. In order to better define the behaviour of gliomas and guide their treatment, The World Health Organisation has devised a grading system from 1 to 4, grade 4 being those fast growing and therefore most aggressive.

Grade II gliomas are generally defined as low grade (LGG). They account for about 15% of primary brain tumours in adults. Approximately 80% of patients with a LGG present with fits, which progress with time from focal to generalised to eventually become unresponsive to medications. In addition, patients with LGG often develop memory problems and personality changes that impact on the quality of their lives.

In a previous study using imaging techniques, we observed that the brain of patients with LGG is diffusely inflamed compared to normal individuals of the same age. Because inflammation is known to cause damage to the brain, we have decided to study this problem more in depth using tissue supplied by Brain UK.

Our aims are to i) prove that results obtained with imaging reflect the reality; ii) understand the mechanism of brain damage caused by inflammation; iii) understand if treatment to reduce inflammation can help to controlling epilepsy and reduce the burden of memory and intellectual problems.