MATHEMATICAL MODEL SUGGESTS A WAY TO ASSESS LOW GRADE GLIOMA MALIGNANCY

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ABSTRACT

Low grade gliomas are infiltrative and incurable primary brain tumours with typically slow evolution. These tumours usually occur in young and otherwise healthy patients, bringing controversies in treatment planning since aggressive treatment may lead to undesirable side effects in patients with very slowly growing tumours. Thus, for management decisions it would be valuable to know how fast LGGs grow and how we can test their response to standard therapies with the lowest possible toxicity. Here, we propose a mathematical model of low grade glioma growth and its response to chemotherapy which agrees with available medical data. The model predicts, and the clinical data confirm, that the speed of a response to chemotherapy is related to the tumour aggressiveness. Thus, the response to a few chemotherapy cycles upon diagnosis might be used to predict the speed of the tumour growth and further prognosis.

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