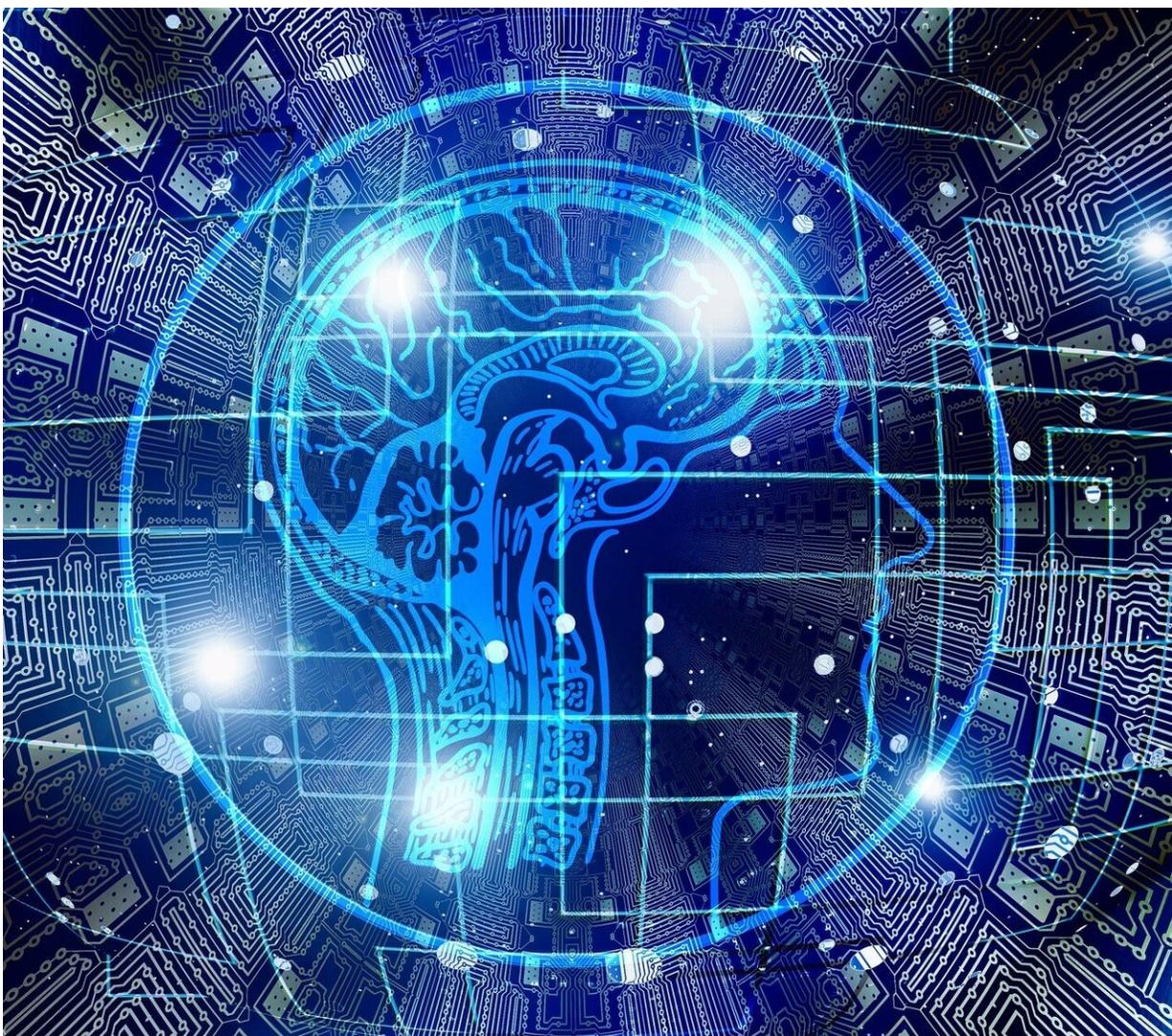# Medical Xpress

Computer-assisted diagnostic procedure enables earlier detection of brain tumor growth

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A computer-assisted diagnostic procedure helps physicians detect the growth of

A computer-assisted diagnostic procedure helps physicians detect the growth of low-grade brain tumors earlier and at smaller volumes than visual comparison alone, according to a study published May 28 in the open-access journal *PLOS Medicine* by Hassan Fathallah-Shaykh of the University of Alabama at Birmingham, and colleagues. However, additional clinical studies are needed to determine whether early therapeutic interventions enabled by early tumor growth detection prolong survival times and improve quality of life.

Low-grade gliomas constitute 15% of all adult brain tumors and cause significant neurological problems. There is no universally accepted objective technique available for detecting the enlargement of low-grade gliomas in the clinical setting. The current gold standard is subjective evaluation through visual comparison of 2-D images from longitudinal radiological studies. A computer-assisted diagnostic procedure that digitizes the tumor and uses imaging scans to segment the tumor and generate volumetric measures could aid in the objective detection of tumor growth by directing the attention of the physician to changes in volume. This is important because smaller tumor sizes are associated with longer survival times and less neurological morbidity. In the new study, the authors evaluated 63 patients—56 diagnosed with grade 2 gliomas and 7 followed for an imaging abnormality without pathological diagnosis—for a median follow-up period of 150 months, and compared tumor growth detection by seven physicians aided by a computer-assisted diagnostic procedure versus retrospective clinical reports.

The computer-assisted diagnostic procedure involved digitizing magnetic

resonance imaging scans of the tumors, including 34 grade 2 gliomas with radiological progression and 22 radiologically stable grade 2 gliomas. Physicians aided by the computer-assisted method diagnosed tumor growth in 13 of 22 glioma patients labeled as clinically stable by the radiological reports, but did not detect growth in the imaging-abnormality group. In 29 of the 34 patients with progression, the median time-to-growth detection was 14 months for the computer-assisted method compared to 44 months for current standard-of-care radiological evaluation. Using the computer-assisted method, accurate detection of tumor enlargement was possible with a median of only 57% change in tumor volume compared to a median of 174% change in volume required using standard-of-care clinical methods. According to the authors, the findings suggest that current clinical practice is associated with significant delays in detecting the growth of low-grade gliomas, and computer-assisted methods could reduce these delays.