TUMOR INFILTRATION DETECTION AND CELL DENSITY MAPPING

Tech ID: 34025 / UC Case 2025-129-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Glioblastoma is a malignant primary brain tumor that is highly invasive and infiltrative. Surgical resection and radiation therapy are not able to remove all tumor cells. Consequently, residual tumor is found in the majority of patients after surgery, causing early recurrence and decreased survival. Magnetic Resonance Imaging (MRI) is routinely used in the diagnosis, treatment planning and monitoring of glioblastoma. The contrast-enhancing region identified with MRI is generally used to guide surgery and to provide a reference for radiotherapy planning. While edema and non-enhancing regions surrounding the tumor are potential sites of tumor infiltration, usually they are not included in surgical resection as routine MRI cannot differentiate tumorous tissues in those regions.

UC Berkeley researchers have developed a novel MRI technique that can identify, non-invasively and in-vivo, areas of altered iron metabolism associated with tumor activities in the edema tissue surrounding glioblastoma. The technique uniquely delineates a hyperintense area within the edema. The method can be used to guide surgery and radiotherapy and to monitor treatment response.

SUGGESTED USES

- identifying brain regions infiltrated by glioblastoma
- guide both surgical and radiotherapy planning,
- treatment monitoring of glioblastomas

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INVENTORS

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OTHER INFORMATION

KEYWORDS

MRI, tumor imaging, glioblastoma, surgical, radiotherapy

CATEGORIZED AS

- **Optics and Photonics**
  - All Optics and Photonics
- **Medical**
  - Devices
  - Imaging

RELATED CASES

2025-129-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Frequency Programmable MRI Receive Coil
- Methods And Use Of Activating Endogenous Ion Channels
- Multiphoton Magnetic Resonance Imaging
- Any-Nuclei Distributed Active Programmable Transmit MRI Coil