

New possibilities for surgical treatment of glioblastomas

Field of application

Glioblastomas (glioblastoma multiforma) represent the most common form of malignant brain tumors in adults. At a fine-tissue level, glioblastomas are very similar to the glia cells of the brain and generally mean a bad prognosis for the patient. Brain tumors are classified by malignancy according to the WHO classification grades I - IV. The therapies currently available are limited to radiation, chemotherapy and primarily to the surgical reduction of the tumor mass in the brain. However, surgeons quickly run into their limits as tumors tend to grow in a diffuse infiltrating manner into the surrounding brain tissue and therefore cannot be removed completely. A complete removal of the tumor, however, is crucial for the prognosis of the patient. Currently, the average survival time of patients with a brain tumor is approx. 15 months.

State of the art

According to the current state of the art, patients can be administered a drinking solution with a substance that accumulates in the brain tumor prior to surgery. When illuminated with blue light, the tumor emits a fluorescent red-violet light which is used by surgeons for orientation. This method, however, makes it necessary to constantly switch between the filter and the regular surgical microscope. It does not allow for a distinction between the individual characteristics of the tumor.

Innovation

Researchers at Reutlingen University have succeeded in developing a marker-free method that allows for the characterization of tumors in terms of their chemical properties (e.g. via spectral absorbance, with different wavelengths) and in terms of their morphological properties (e.g. via measurement of spectral scattered light). This can be realized in vivo and in vitro. The multivariate analysis algorithm for spectral imaging enables the recognition of spectral key factors in correlation to the malignancy of tumor cells.

The spectroscopic measuring unit can be easily fixed to a surgical microscope or endoscope. The resulting image or image section is immediately qualified and used by the surgeon for decision-making.

Patent portfolio

An EP application is pending.

Your benefits at a glance

- ✓ Marker-free technology
- ✓ For use with tissue preparations, as well as directly with patients (in situ)
- ✓ Surgery accompanying diagnostics
- ✓ No approval process required for tissue preparations
- ✓ Cost-effective integration into existing surgery infrastructure
- ✓ Easy to use
- ✓ Integration into all imaging methods (microscopy, endoscopy, etc.)
- ✓ Deployable for additional (tumor) tissues

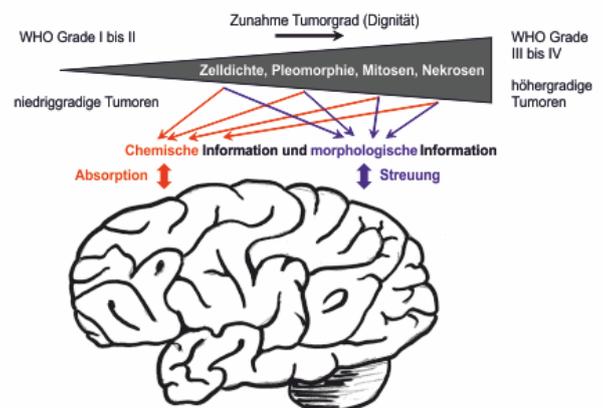


Figure 1: Spectral absorbance and scattering of gliomas.

Technology transfer

Technologie-Lizenz-Büro GmbH is responsible for the exploitation of this technology and assists companies in obtaining licenses.

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