Experience with Recurrent Glioblastoma Surgery plus Intraoperative Balloon Electronic Brachytherapy

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Disclosure

Herewith we confirm that we do not have any relevant financial relationships with commercial interests.

We have no actual or potential conflict of interest in relation to this presentation.
Background

Treatment options for recurrent glioblastoma (rGBM) are very limited. Role of surgery is still subject of debate. External beam re-irradiation after second surgery is another problematic issue. We report our initial experience with maximal safe resection followed by intraoperative balloon electronic brachytherapy (IBEB) for rGBM.
Material & Methods:

- 8 patients with rGBM underwent 5-ALA neuronavigation guided resection under neurophysiologic control.
- Post resection cavity volume was measured by filling it with normal saline to select the balloon volume. IBEB of 20 Gy was carried out.
- Gadolinium enhancement brain MRI plus MRI-perfusion was obtained within 24 hrs. after surgery.
- Patients were followed up every 2 months using the same imaging modalities.
Material & Methods

5-ALA guided surgery

Pentero 900 white light view

Pentero 900 Blue400 light view
Material & Methods

**IBEB**

Recurent GBM CE MRI prior to surgery

IBEB presurgical planning for recurrent GBM

IBEB in progress

Inflated balloon in position
Results

Gross total tumor resection was achieved in 5 patients (group I) and subtotal in 3 patient (group II) with no additional neurological deficit. In group I all patients have no evidence of tumor progression so far (follow-up period from 0,5 to 17,0 months). In group II mean progression free survival after second surgery was 5,7 months only.
Results

(n=8, median age 47.5 yrs)

- Mean PFS after first surgery (all patients) - 10 months
- Mean PFS after iBEB for STR group – 5.7 months,
- No progression in GTR group (follow-up period from 0.5 to 17 months)
- Average balloon volume – 58 ml (20-120 ml)
Results

Post surgery CE MRI obtained within 24 h

CE MRI + MR-Perfusion 17 months later!
Conclusion

Gross total rGBM resection followed by IBEB is feasible and seems to be promising technology.

No serious complications have been observed so far

Further cooperative study is warranted