

# Re-irradiation with or without temozolomide results in a median survival of 11 months in patients with recurrent glioma

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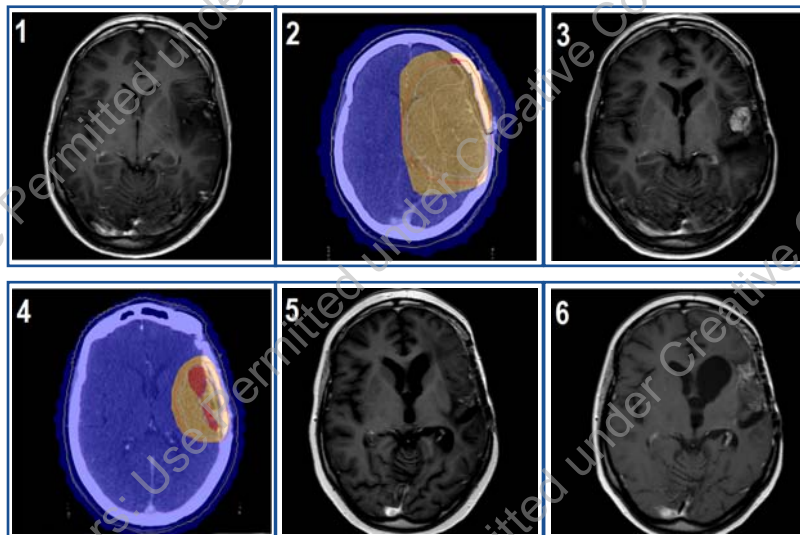
## Purpose

To determine overall survival (OS) and progression free survival (PFS) after re-irradiation (Re-RT) for recurrent glioma and establish prognostic factors which determine OS and PFS after re-irradiation.

## Patients/Methods

- Retrospective study 2003 – 2011
- 66 patients re-irradiated MAASTROclinic
- RT-techniques:
  - Conformal radiotherapy (17)
  - Fractionated stereotactic radiotherapy (15)
  - Stereotactic radiosurgery (1)
  - Intensity modulated radiotherapy (33)
- Median dose initial RT: 60 Gy [45 – 60Gy]
- Median total dose Re-RT 54 Gy [8 – 60 Gy]
- Concurrent temozolomide (TMZ) if possible

Patient characteristics	No (n = 66)
Median age	44 [15 -72]
Female	26 (39.4%)
Male	40 (60.6%)
Prim. GBM	35 (53.0%)
Sec. GBM	14 (21.2%)
Other	17 (25.8%)
Median PTV	165.26 [3.86 – 660.65]
WHO PFS 0/1/2	36/23/7 (54.5/34.8/10.6%)
Resection (complete)	25 (37.9%) (11 (16.7%))
Re-resection	17 (25.8%)
Concurrent TMZ	22 (33.3%)



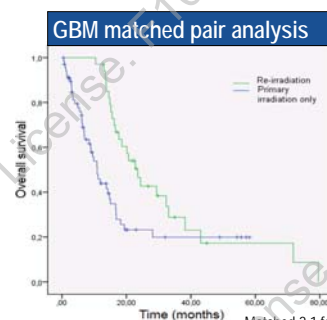
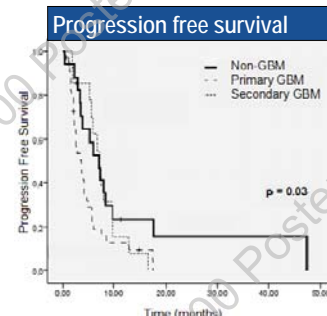
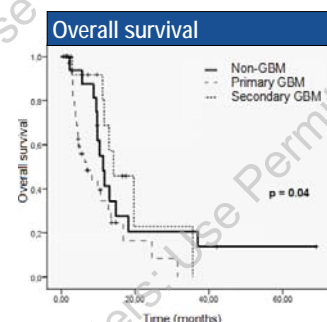
1. Post-operative MRI 2. Initial RT 3. Recurrence 4. Re-irradiation 5. Six months follow-up 6. Twelve months follow-up

## Results

### Multivariate analysis<sup>1</sup>

Variable	Total Group		Progression Free Survival		Subgroup Analysis of Primary GBM		Progression Free Survival	
	Overall Survival		Overall Survival		Overall Survival		Overall Survival	
	p-value	HR (95% CI)	p-value	HR (95% CI)	p-value	HR (95% CI)	p-value	HR (95% CI)
Initial histology	n.s.		0.01	2.13 (1.17-3.85)				
Interval (6 mths)	0.02	0.94 (0.90-0.99)	n.s.		0.007	0.60 (0.41-0.87)	0.001	0.52 (0.36-0.76)
Extent resection			0.02	0.41 (0.19-0.85)			n.s.	
Corticosteroids post-re-irradiation	0.001	3.31 (1.68-6.51)	0.02	1.95 (1.11-3.42)	0.03	3.02 (1.09-8.38)	n.s.	

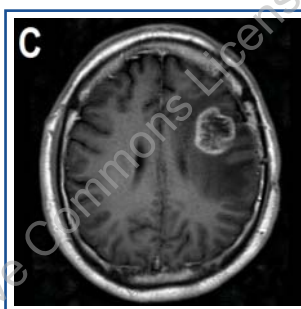
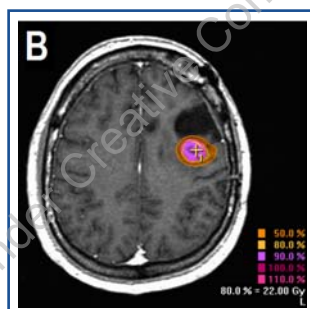
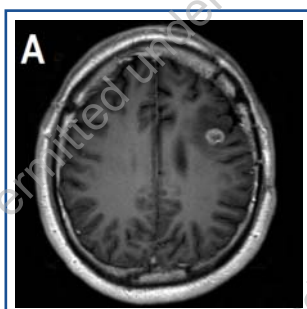
<sup>1</sup> GTV, CTV and resection were excluded from the multivariate analysis because of close correlation with other significant factors



Matched 2:1 for gender and age

### Toxicity: All toxicity was reversible

CTC grade 1/2: alopecia, fatigue, headache, nausea; seizure (n=1), radiation necrosis (n=1). CTC 4: Thrombocytopenia (n=3)



### Toxicity - Case

A. Recurrence after CRT (Jan '04 - 59.4 Gy), B. Treatment plan of Stereotactic radiosurgery (Dec '05 - 27.5 Gy) C. Radiation necrosis (March '06)

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## Conclusion

Re-RT results in a median OS of 11 months with low toxicity which is comparable to literature.<sup>2</sup> The length of the interval between initial irradiation and re-irradiation is the main prognostic factor for survival after re-irradiation for patients with a glioma and more specifically a primary GBM (OS and PFS). Concurrent TMZ was not a prognostic factor for OS/PFS. As the prognosis of these patients remains poor, quality-of-life and neurocognition after Re-RT should in addition prospectively be investigated.

<sup>2</sup> Niyazi M, Siefert A, Schwarz SB et al Therapeutic options for recurrent malignant glioma. Radiother Oncol. 2011 Jan;98(1):1-14.

