

Supplementary Materials: Location-Dependent Patient Outcome and Recurrence Patterns in IDH1-Wildtype Glioblastoma

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Table S1. Covariates included into the multivariate model.

Complete Cohort			Groups II VS. III		
Overall Survival	PFS	Survival after Relapse	Overall Survival	PFS	Survival after Relapse
Covariates at 1st Diagnosis					
age (median splitted)	age (median splitted)	age (median splitted)	age (median splitted)	age (median splitted)	age (median splitted)
KPS pre-operative	KPS pre-operative		KPS pre-operative	KPS pre-operative	KPS pre-operative
location I vs II vs III vs IV	location I vs II vs III vs IV		location II vs III	location II vs III	
multifocal disease CE	multifocal disease CE		multifocal disease CE	multifocal disease CE	
multifocal disease FLAIR	multifocal disease FLAIR		multifocal disease FLAIR	multifocal disease FLAIR	
SVZ involvement	SVZ involvement		SVZ involvement	SVZ involvement	
cortical involvement	cortical involvement		cortical involvement	cortical involvement	
EOR	EOR		EOR	EOR	
intensified treatment	intensified treatment		intensified treatment	intensified treatment	
Covariates at Tumor Relapse					
		location I vs II vs III vs IV			location II vs III
		local recurrence			local recurrence
		distant recurrence			distant recurrence
		multifocal disease CE			multifocal disease CE
		multifocal disease FLAIR			multifocal disease FLAIR
		SVZ involvement			SVZ involvement
		cortical involvement			cortical involvement
treatment intensity	treatment intensity	treatment intensity	treatment intensity	treatment intensity	treatment intensity
treatment intensity, non-surgical	treatment intensity, non-surgical		treatment intensity, non-surgical	treatment intensity, non-surgical	

Table S2. Univariate Analysis of Survival Endpoints in the Complete IDH1-Wildtype Cohort ($n = 285$).

Patients (n)	OS	PFS	Survival after Relapse
	285	285	195
	p -value	p -value	p -value
Covariates at 1st Diagnosis			
Age (median splitted; 64 years)	<0.0001 ***	0.016 *	0.006 **
KPS pre-operative	0.046 *	0.75	0.34
Location			
- SVZ+ vs. SVZ-	<0.0001 ***	0.15	0.023 *
- Cortex+ vs. Cortex-	0.57	0.73	0.31
- Group II vs. III	0.028 *	0.35	0.8
Multifocal Disease			
- CE	0.003 **	0.034 *	0.005 **
- FLAIR	0.028 *	0.002 **	0.21
Extent of Resection			
- GTR vs. STR	<0.0001 ***	<0.0001 **	0.018 *
- GTR vs. NA	0.006 **	0.021 *	0.123
Intensified Treatment (Stupp)	<0.0001 ***	<0.0001 ***	<0.0001 ***
Covariates at Tumor Relapse			
Location (at relapse)			
- SVZ+ vs. SVZ-	<0.001 ***	NA	<0.0001 ***
- Cortex+ vs. Cortex-	0.001 **	NA	0.003 **
- Group II vs. III	0.71	NA	0.92
Multifocal Disease (at relapse)			
- CE	0.55	NA	0.11
- FLAIR	0.32	NA	0.31
Recurrence Pattern			
- local	0.29	NA	0.41
- distant	0.78	NA	0.87
Extent of Resection (at relapse)			
- GTR vs. STR	0.007 **	NA	0.002 **
- GTR vs. NA	0.579	NA	0.569
Treatment Intensity (at relapse)	<0.0001 ***	NA	<0.0001 ***
Non-surgical Treatment Intensity (at relapse)	<0.001 ***	NA	<0.0001 ***

OS: overall survival; PFS: progression-free survival; KPS: Karnofsky Performance Score; CE: contrast enhancement; FLAIR: fluid-attenuated inversion recovery; GTR: gross total resection; STR: subtotal resection; NA: EOR not available; ns: not significant; NA: not applicable, significance levels: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table S3. Univariate Analysis of Survival Endpoints in Group II and Group III IDH1-Wildtype GBM ($n = 158$).

Patients (n)	OS	PFS	Survival after Relapse
	143		60
	p -value	p -value	p -value
Covariates AT 1st Diagnosis			
Age (median splitted; 64 years)	<0.0001 ***	0.002 **	0.008 **
KPS pre-operative	0.48	0.56	0.033 *
Location			
- Group II vs. III	0.028 *	0.35	0.8
Multifocal Disease			
- CE	0.023 *	0.13	0.068
- FLAIR	0.023 *	0.003 **	0.25
Extent of Resection			
- GTR vs. STR	<0.0001 ***	<0.0001 ***	0.25
- GTR vs. NA	0.035 *	0.015	0.44
Intensified Treatment (Stupp)	<0.0001 ***	<0.0001 ***	0.001 **
Covariates at Tumor Relapse			
Location (at relapse)			
- SVZ+ vs. SVZ-	0.074	NA	0.045 *
- Cortex+ vs. Cortex-	0.082	NA	0.063
- Group II vs. III	0.97	NA	0.99
Multifocal Disease (at relapse)			
- CE	0.36	NA	0.12
- FLAIR	0.083	NA	0.031 *
Recurrence Pattern			
- local	0.92	NA	0.78
- distant	0.67	NA	0.46
Extent of Resection (at relapse)			
- GTR vs. STR	0.014 *	NA	<0.001 ***
- GTR vs. NA	0.759	NA	0.628
Treatment Intensity (at relapse)	0.015 *	NA	0.003 **
Non-surgical Treatment Intensity (at relapse)	0.019 *	NA	0.007 **

OS: overall survival; PFS: progression-free survival; KPS: Karnofsky Performance Score; CE: contrast enhancement; FLAIR: fluid-attenuated inversion recovery; GTR: gross total resection; STR: subtotal resection; NA: EOR not available; ns: not significant; NA: not applicable, significance levels: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.



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