Supplementary material

eTable 1. Collinearity matrix: Pearson Correlation coefficients of more than 0.4 in absolute value								
Variable	EQD2	Pre-existing callosal enh	Tumour size at progression	New lesion	Mass-effect compared to baseline	New callosal enh	New or increased enh septum pellucidum	Soap bubble enh
Type of treatment	0.440							
New callosal enhancement		0.547					0.524	
Enhancement crosses midline		0.454	0.409			0.635	0.517	
Tumour size at baseline			0.752					
Increased marginal enhancement				-0.681				
FLAIR-abnormalities compared to baseline					0.623			
Necrotic component								0.589
New or increased subependymal enhancement						0.409		
Swiss cheese enhancement			0.480					

EQD2 = *absorbed biological radiation doses.* ***Enh*** *= contrast enhancement*

eTable 2: Baseline criteria and logistic regression analysis						
Variable	**Number of lesions** n=284		**Univariable analysis**		**Multivariable analysis**	
	PD n=141	**TIE** n=143	**OR (95%-CI)**	**p**	**OR (95%-CI)**	**p**
Sex: Male (ref)/ Female	92 / 49	97 / 46	1.12 (0.69-1.84)	0.645	1.04 (0.55-1.96)	0.900
Age (years): ≤49 years (ref)	31	31		0.160		0.350
50-59 years	33	49	0.67 (0.35–1.31)	0.244	0.69 (0.29-1.62)	0.391
60-69 years	55	49	1.12 (0.60–2.11)	0.719	1.17 (0.52-2.63)	0.704
≥70 years	22	14	1.57 (0.68–3.62)	0.289	1.59 (0.53-4.81)	0.409
Type of operation:				0.698		0.876
Biopsy	28	26	ref		ref	
Complete resection	29	25	1.08 (0.51–2.29)	0.847	1.33 (0.42-4.19)	0.625
Debulking	84	92	0.85 (0.46–1.56)	0.596	1.15 (0.43-3.07)	0.787
Histological tumour type:				0.518		0.262
Astrocytoma	8	9	ref		ref	
Oligodendroglioma	1	4	0.28 (0.03–3.07)	0.298	0.48 (0.03-8.40)	0.612
Oligoastrocytoma	8	5	1.80 (0.42-7.81)	0.433	1.23 (0.16-9.62)	0.846
Glioblastoma	124	125	1.12 (0.42–2.99)	0.827	3.16 (0.63-15.79)	0.161
Type of treatment: RT / CT	108	129	0.36 (0.18–0.70)	**0.003**	0.38 (0.12-1.16)	0.088
RT monotherapy	33	14	ref		ref	
EQD2: Range in Gy	42 - 60	51 - 60	0.67 (0.48–0.93)	**0.016**	0.73 (0.53-0.99)	**0.042**
Clinical deterioration*:						
No / Yes	85 / 56	100 / 43	1.53 (0.94–2.51)	0.089	1.05 (0.56-2.00)	0.873
Time to progression (months				**0.018**		**0.002**
after RT): 0 - 3months	84	105	ref		ref	
3 – 5 months	13	14	1.16 (0.52–2.60)	0.718	1.28 (0.44-3.77)	0.651
> 5 months	44	24	2.29 (1.29–4.07)	**0.005**	4.15 (1.86-9.26)	**0.001**
Tumour size at baseline				0.847		0.329
(mm^2): < 1000	126	129	1.17 (0.35–3.94)	0.797	4.17 (0.61-28.73)	0.147
1000 – 2000	10	8	1.50 (0.33–6.77)	0.598	4.07 (0.54-30.39)	0.172
> 2000	5	6	ref		ref	
Tumour size at progression:						
Range in mm^2	9 - 4554	9 - 4020	1.00 (1.00–1.00)	0.077		
Lesion growth (%):				0.974		0.663
Non-measurable disease at baseline	46	51	ref		ref	
Tumour growth 0-10%	8	7	1.27 (0.43–3.77)	0.670	1.20 (0.29-5.02)	0.800
10-25%	12	10	1.33 (0.53–3.37)	0.547	1.14 (0.36-3.62)	0.828
25-50%	18	18	1.11 (0.52–2.38)	0.792	0.58 (0.20-1.65)	0.305
>50%	57	57	1.11 (0.65–1.91)	0.709	0.69 (0.33-1.47)	0.334
Pre-existing nodular enhancement*: No / Yes	128 / 13	128 / 15	0.87 (0.40–1.90)	0.720	1.86 (0.67-5.17)	0.232
Pre-existing callosal enhancement*: No / Yes	110 / 26	114 / 29	0.93 (0.52–1.68)	0.807		
New enhancing lesion*:						
No / Yes	116 / 25	112 / 31	0.78 (0.43-1.40)	0.404		
Multiple new enhancing lesions*: No / Yes	85 / 56	86 / 57	0.99 (0.62–1.60)	0.980	1.68 (0.85-3.30)	0.137
Mass-effect compared to baseline scan:				0.145		
Increased	117	107	2.55 (0.95–6.88)	0.064		
Stable	18	22	1.91 (0.61–5.98)	0.267		
Decreased	6	14	ref			
FLAIR-SI compared to baseline: Hyperintensity	124	115	2.16 (0.89-5.23)	0.190 0.089	2.16 (0.70-6.63)	0.386 0.178

Isointensity	9	12	1.50 (0.45–5.04)	0.512	2.46 (0.49-12.34)	0.274
Hypointensity	8	16	ref		ref	
Enhancement crossing the midline*: No / Yes	121 / 20	126 / 17	1.23 (0.61–2.45)	0.566		
Increased marginal enhancement of surgical cavity*: No/Yes	37 / 104	48 / 95	1.42 (0.85–2.37)	0.179	2.04 (0.93-4.47)	0.074
New callosal enhancement*: No / Yes	115 / 26	121 / 22	1.24 (0.67–2.32)	0.493	1.07 (0.41-2.78)	0.886
New enhancement septum pellucidum*: No / Yes	131 / 10	138 / 5	2.11 (0.70–6.33)	0.184	3.36 (0.57-19.75)	0.181
New/increased subependymal enhancement*: No / Yes	70 / 71	82 / 61	1.36 (0.85–2.18)	0.194	1.00 (0.52-1.92)	0.999
New nodular enhancement*: No / Yes	24 / 117	26 / 117	1.08 (0.59–2.00)	0.797	1.33 (0.60-2.97)	0.482
Necrotic component*: No / Yes	17 / 124	31 / 112	2.02 (1.06–3.85)	**0.033**		
Soap bubble enhancement*: No / Yes	29 / 112	52 / 91	2.21 (1.30–3.76)	**0.004**	2.96 (1.39-6.30)	**0.005**
Swiss cheese enhancement*: No / Yes	116 / 25	122 / 21	1.25 (0.67–2.36)	0.487	2.26 (0.95-5.38)	0.065
Spreading wavefront pattern*: No / Yes	81 / 60	98 / 45	1.61 (0.99–2.62)	0.054	1.09 (0.58-2.03)	0.791
T1-SI compared to WM:				0.990		0.697
Hypointensity	121	122	ref		ref	
Hyperintensity	2	2	1.01 (0.14–7.27)	0.993	0.74 (0.04-12.48)	0.835
Isointensity	16	17	0.95 (0.46–1.96)	0.888	1.51 (0.56-4.05)	0.415
FLAIR-abnormalities compared to WM:						
Increased	134	130	1.62 (0.61–4.31)	0.334	2.13 (0.58-7.74)	0.253
Stable or Decreased	7	11	ref		ref	
ADC-SI compared to WM:				0.138		**0.024**
Hyperintensity	88	106	ref		ref	
Isointensity	31	23	1.62 (0.88–2.99)	0.119	2.67 (1.19-5.98)	**0.017**
Hypointensity	18	12	1.81 (0.83–3.95)	0.139	2.74 (0.93-8.10)	0.068

***PD**=progressive disease**. TIE=**treatment-induced effects**. ref**=reference category. **SI**=signal intensity. **RT**=Radiotherapy. **CT**=Chemotherapy. **OR**=odds ratio. **95%-CI=**95% confidence interval. **EQD2=**absorbed biological radiation doses. **WM**=White matter. Determinants marked with* (dichotomous determinants): the no-value was the reference. **Hosmer&Lemeshow goodness of fit:** p=0.660. **Area under the ROC Curve**=0.771 (95%-CI=0.72-0.83). Statistically significant p-values (**p**) are bolded.*

eTable 3. Baseline characteristics and logistic regression analysis of subgroup histomolecular tumour type according to WHO 2016 criteria [2]						
Variable	**Number of lesions** n=246		**Univariable analysis**		**Multivariable analysis**	
	PD n=123	**TIE** n=123	**OR (95%-CI)**	**p**	**OR (95%-CI)**	**p**
Sex: Male (ref)/ Female	80 / 43	82 / 41	1.08 (0.64-1.82)	0.788	0.58 (0.28-1.23)	0.156
Age (years): (ref = ≤49 years)				**0.035**		0.108
50-59 years	28	45	0.67 (0.33–1.35)	0.263	0.42 (0.15-1.14)	0.088
60-69 years	48	40	1.29 (0.66–2.52)	0.459	1.02 (0.40-2.64)	0.965
≥70 years	20	9	2.39 (0.93–6.14)	0.071	1.47 (0.41-5.25)	0.550
Type of operation: (ref = Biopsy)				0.683		0.649
Complete resection	23	23	0.78 (0.34–1.82)	0.570	1.38 (0.34-5.58)	0.649
Debulking	77	82	0.74 (0.37–1.47)	0.382	1.76 (0.49-6.39)	0.391
Histological tumour type: (ref =Astrocytoma grade 4)				0.069		**0.018**
Astrocytoma grade 3	0	3	0	0.999	0	0.999
Oligodendroglioma grade 3	2	7	0.86 (0.12–5.94)	0.876	1.89 (0.15-24.42)	0.625
Glioblastoma grade 4	117	101	3.48 (1.09–11.11)	**0.036**	16.03 (2.48-103.43)	**0.004**
Type of treatment*: RT / CT	94	112	0.32 (0.15–0.67)	**0.003**	1.81 (0.41-8.00)	0.435
RT monotherapy	29	11				
EQD2: Median (IQR)	60 (60)	60 (60)	0.63 (0.41–0.95)	**0.028**	0.14 (0.03-0.57)	**0.006**
Range in Gy	42-60	51-60				
Clinical deterioration*: N/Y	73 / 50	85 / 38	1.53 (0.91–2.59)	0.111	0.78 (0.37-1.64)	0.514
Time to progression (months after RT): (ref = 0 - 3 months)				**0.044**		**0.001**
3 – 5 months	11	12	1.12 (0.47–2.68)	0.803	1.81 (0.51-6.43)	0.358
> 5 months	39	22	2.16 (1.18–3.97)	**0.013**	6.78 (2.50-18.34)	**0.000**
Tumour size at baseline (mm^2): (ref = >2000)				0.896		0.909
< 1000	110	112	0. 74 (0.16–3.37)	0.693	1.88 (0.11-31.58)	0.661
1000 – 2000	9	8	0.84 (0.14–4.97)	0.851	1.72 (0.10-29.05)	0.708
Tumour size at progression: Median (IQR)	357 (110-943)	195 (63-598)	1.00 (1.00–1.00)	0.074		
Range in mm^2	15 - 4554	9 - 4020				
Lesion growth (%): (ref= Non-measurable disease at baseline)				0.974		0.450
Tumour growth 0-10%	7	6	1.26 (0.39–4.08)	0.701	0.57 (0.11-3.03)	0.505
10-25%	10	10	1.08 (0.40–2.88)	0.879	0.92 (0.24-3.51)	0.899
25-50%	17	14	1.31 (0.57–3.02)	0.525	0.55 (0.16-1.89)	0.340
>50%	51	52	1.06 (0.59–1.90)	0.850	0.44 (0.18-1.09)	0.075
Pre-existing nodular enhancement*: N/Y	112 / 11	108 / 15	0.71 (0.31–1.61)	0.408	1.07 (0.34-3.34)	0.904
Pre-existing callosal enhancement*: N/Y	97 / 21	98 / 25	0.85 (0.45–1.62)	0.618		
New enhancing lesion*: N/Y	102 / 21	97 / 26	0.77 (0.41-1.46)	0.418		
Multiple new enhancing lesions*: N/Y	74 / 49	74 / 49	1.00 (0.60–1.67)	1.000	1.97 (0.89-4.36)	0.093
Mass-effect compared to baseline scan: (ref = Decreased)				0.299		
Increased	103	96	2.36 (0.79–7.04)	0.124		
Stable	15	16	2.06 (0.58–7.35)	0.264		
FLAIR-SI compared to baseline: (ref = Hypointensity)				0.209		0.676
Hyperintensity	109	99	2.06 (0.84–5.08)	0.115	1.73 (0.50-5.96)	0.387

Isointensity	6	9	1.25 (0.33–4.79)	0.745	1.86 (0.28-12.14)	0.519
Enhancement crossing the midline*: N/Y	107 / 16	109 / 14	1.16 (0.54–2.50)	0.697		
Increased marginal enhancement of surgical cavity*: N/Y	30 / 93	41 / 82	1.55 (0.89–2.71)	0.123	2.08 (0.84-5.15)	0.114
New callosal enhancement*: N/Y	101 / 22	105 / 18	1.27 (0.64–2.51)	0.490	0.94 (0.31-2.85)	0.919
New enhancement septum pellucidum*: N/Y	115 / 8	121 / 2	4.21 (0.88–20.24)	0.073	6.78 (0.59-78.32)	0.125
New/increased subependymal enhancement*: N/Y	61 / 62	69 / 54	1.30 (0.79–2.15)	0.307	1.03 (0.47-2.22)	0.949
New nodular enhancement*:N/Y	23 / 100	22 / 101	0.95 (0.50–1.81)	0.869	1.06 (0.41-2.72)	0.905
Necrotic component*: N/Y	13 / 110	25 / 98	2.16 (1.05–4.45)	**0.037**		
Soap bubble enhancement*: N/Y	23 / 100	43 / 80	2.34 (1.30–4.20)	**0.004**	3.05 (1.23-7.58)	**0.016**
Swiss cheese enhancement*:N/Y	100 / 23	105 / 18	1.34 (0.68–2.64)	0.393	2.04 (0.76-5.47)	0.158
Spreading wavefront pattern*: N/Y	73 / 50	89 / 34	1.79 (1.05–3.06)	**0.032**	1.27 (0.61-2.66)	0.522
T1-SI compared to WM:				0.854		0.910
Hypointensity	108	108	ref		ref	
Hyperintensity	1	2	0.50 (0.05–5.60)	0.574	0	0.989
Isointensity	12	12	1.00 (0.43–2.32)	1.000	1.32 (0.38-4.53)	0.664
FLAIR-abnormalities compared to WM:						
Increased	118	114	1.66 (0.53–5.21)	0.388	2.82 (0.56-14.19)	0.208
Stable or Decreased	5	8				
ADC-SI compared to WM:				0.236		0.345
Hyperintensity	81	94	ref		ref	
Isointensity	26	20	1.51 (0.78–2.90)	0.218	2.02 (0.76-5.35)	0.159
Hypointensity	13	8	1.89 (0.74–4.78)	0.181	1.52 (0.39-6.00)	0.546

***PD**=progressive disease**. TIE=**treatment-induced effects**. ref**=reference category. **SI**=signal intensity. **RT**=Radiotherapy. **CT**=Chemotherapy. **OR**=odds ratio. **95%-CI=**95% confidence interval. **EQD2=**absorbed biological radiation doses. **WM**=White matter. **N/Y**=No/Yes. Determinants marked with*(dichotomous determinants): the no-value was the reference. **Hosmer & Lemeshow goodness of fit:** p=0.859. **Area under the ROC Curve**=0.829 (95%-CI=0.78-0.88). Statistically significant p-values (**p**) are bolded.*

eTable 4. Baseline characteristics and logistic regression analysis of subgroup glioblastoma treated with temozolomide-based chemoradiation						
Variable	**Number of lesions** n=189		**Univariable analysis**		**Multivariable analysis**	
	PD n=88	**TIE** n=101	**OR (95%-CI)**	**p**	**OR (95%-CI)**	**p**
Sex: Male (ref)/ Female	64 / 24	67 / 34	0.74 (0.40–1.38)	0.343	0.66 (0.30-1.45)	0.297
Age (years): (ref = ≤49 years)				**0.021**		**0.012**
50-59 years	16	37	0.54 (0.24–1.24)	0.147	0.52 (0.18-1.52)	0.231
60-69 years	41	32	1.60 (0.76–3.38)	0.217	1.75 (0.68-4.49)	0.242
≥70 years	11	7	1.96 (0.64–5.99)	0.235	4.01 (0.96-16.75)	0.057
Type of operation: (ref = Biopsy)				0.197		0.346
Complete resection	23	17	2.71 (0.85–8.66)	0.094	2.65 (0.50-14.01)	0.250
Debulking	59	72	1.64 (0.58–4.63)	0.351	1.44 (0.32-6.53)	0.636
EQD2 in Gy: Median (IQR)	60 (60),	60 (60)				
Range	51–60	60				
Clinical deterioration*: N/Y	60 / 28	79 / 22	1.68 (0.87–3.22)	0.120	1.31 (0.57-3.02)	0.528
Time to progression (months				0.071		**0.004**
after RT): (ref = 0-3months)						0.578
3 – 5 months	8	13	0.81 (0.32–2.10)	0.669	1.46 (0.39-5.45)	**0.001**
> 5 months	24	14	2.27 (1.08–4.77)	**0.031**	5.58 (2.00-15.53)	
Tumour size at baseline (mm^2):				0.505		0.212
(ref = >2000)						
< 1000	82	89	1.84 (0.33–10.33)	0.487	14.5 (0.59-353.64)	0.101
1000 – 2000	4	8	1.00 (0.13–8.00)	1.00	7.54 (0.24-239.61)	0.252
Tumour size at progression	451 (138-	264 (78-				
(mm^2): Median (IQR)	965)	755)	1.00 (1.00–1.00)	0.625		
Range	15 - 4554	9 - 4020				
Lesion growth (%):				0.965		0.862
Non-measurable disease at						
baseline	25	31	ref		ref	
Tumour growth 0-10%	3	4	0.93 (0.19–4.55)	0.929	0.50 (0.06-4.17)	0.522
10-25%	8	9	1.10 (0.37–3.27)	0.861	1.48 (0.35-6.37)	0.596
25-50%	11	15	0.91 (0.36–2.33)	0.843	0.69 (0.18-2.58)	0.579
>50%	41	42	1.21 (0.61–2.39)	0.582	1.00 (0.38-2.63)	0.998
Pre-existing nodular						
enhancement*: N/Y	77 / 11	89 / 12	1.06 (0.44–2.54)	0.897	1.92 (0.54-6.90)	0.316
Pre-existing callosal				0		
enhancement*: N/Y	73 / 15	79 / 22	0.74 (0.36–1.53)	.414		
New enhancing lesion*: N/Y	79 / 9	81 / 20	0.46 (0.20–1.08)	0.073		
Multiple new enhancing						
lesions*: N/Y	57 / 31	69 / 32	1.17 (0.64–2.15)	0.606	1.83 (0.75-4.45)	0.185
Mass-effect compared to				0.150		
baseline: (ref = Decreased)						
Increased	75	77	3.17 (0.99–10.15)	0.053		
Stable	9	11	2.66 (0.64–11.06)	0.179		
FLAIR-SI compared to baseline				0.367		0.290
Hyperintensity	78	82	1.90 (0.73–4.96)	0.189	2.84 (0.76-10.68)	0.122
Isointensity	3	5	1.20 (0.22–6.53)	0.833	1.74 (0.17-17.70)	0.642
Hypointensity	7	14	ref		ref	
Enhancement crossing the						
midline*: N/Y	77 / 11	85 / 16	0.76 (0.33–1.74)	0.513		
Increased marginal						
enhancement of surgical						
cavity*:N/Y	10 / 78	28 / 73	2.99 (1.36–6.59)	**0.007**	5.18 (1.69-15.94)	**0.004**
New callosal enhancement*: N/Y	70 / 18	82 / 19	1.11 (0.54–2.28)	0.777	1.15 (0.36-3.63)	0.813

New enhancement septum pellucidum*: N/Y	82 / 6	96 / 5	1.41 (0.41–4.77)	0.586	5.94 (0.47-75.52)	0.170
New or increased subependymal enhancement*:N/Y	42 / 46	55 / 46	1.31 (0.74–2.32)	0.356	1.37 (0.60-3.13)	0.463
New nodular enhancement*:N/Y	12 / 76	19 / 82	1.47 (0.67–3.22)	0.340	1.41 (0.48-4.12)	0.532
Necrotic component*: N/Y	9 / 79	20 / 81	2.17 (0.93–5.05)	0.073		
Soap bubble enhancement*: N/Y	19 / 69	28 / 73	1.39 (0.71–2.72)	0.332	1.95 (0.69-5.48)	0.206
Swiss cheese enhancement*:N/Y	73 / 15	84 / 17	1.02 (0.47–2.18)	0.969	1.78 (0.61-5.17)	0.289
Spreading wavefront pattern*: N/Y	49 / 39	65 / 36	1.44 (0.80–2.58)	0.225	1.01 (0.49-2.11)	0.972
T1-SI compared to WM				0.964		0.677
Hyperintensity	1	1	1.13 (0.07–18.28)	0.934	2.44 (0.07-87.61)	0.625
Isointensity	7	9	0.88 (0.31–2.46)	0.800	1.72 (0.42-6.98)	0.448
Hypointensity	80	90	ref		ref	
FLAIR-abnormalities compared to WM						
Increased	84	93	1.58 (0.45–5.59)	0.478	2.08 (0.36-12.07)	0.416
Stable or Decreased	4	7	ref		ref	
ADC-SI compared to WM				0.781		0.080
Hyperintensity	60	74	ref		ref	
Isointensity	17	16	1.31 (0.61–2.81)	0.487	3.02 (1.02-8.98)	**0.047**
Hypointensity	9	10	1.11 (0.42-2.91)	0.832	3.15 (0.73-13.61)	0.125

***PD**=progressive disease**. TIE=**treatment-induced effects**. ref**=reference category. **RT**=radiotherapy. **IQR**=interquartile range. **OR**=odds ratio. **95%-CI=**95% confidence interval. **EQD2=**absorbed biological radiation doses. **WM**=white matter. **SI**=signal intensity. **Hosmer & Lemeshow goodness of fit:** p=0.427. **Area under the ROC Curve**=0.792 (95%-CI=0.73-0.86).*
N/Y=No/Yes. *Determinants marked with* (dichotomous determinants): the no-value was the reference. Statistically significant p-values (**p**) are bolded.*

eTable 5. Baseline characteristics of subgroups for different tumour sizes						
Variable	**Number of lesions**					
	<1000 mm² (n=255)		**1000–2000 mm²** (n=18)		**>2000 mm²** (n=11)	
	PD	TIE	PD	TIE	PD	TIE
Sex: Male / Female	80 / 46	88 / 41	8 / 2	5 / 3	4 / 1	4 / 2
Age (years)						
≤49 years	26	25	3	5	2	1
50-59 years	29	48	3	0	1	1
60-69 years	50	43	3	3	2	3
≥70 years	21	13	1	0	0	1
Type of operation						
Complete resection	29	24	0	1	0	0
Debulking	77	86	6	5	1	1
Biopsy	20	19	4	2	4	5
Histological tumour type						
Astrocytoma	8	8	0	0	0	1
Oligodendroglioma	1	4	0	0	0	0
Oligoastrocytoma	8	5	0	0	0	0
Glioblastoma	109	112	10	8	5	5
Type of treatment						
RT monotherapy	28	14	3	0	2	0
RT / CT	98	115	7	8	3	6
EQD2 (Gy): Median (IQR)	60 (60)	60(60)	60 (59.5-60)	60 (60)	60 (58-60)	60 (60)
Range	42 - 60	51 - 60	58 - 60	60	58 - 60	60
Time to progression (months after RT):						
0 – 3 months	73	96	7	4	4	5
3 – 5 months	13	11	0	2	0	1
> 5 months	40	22	3	2	1	0
Clinical deterioration: N/Y	79 / 47	91 / 38	4 / 6	6 / 2	2 / 3	3 / 3
Tumour size at baseline	58	30	1391.5	1559	2346	2655
(mm^2):Median	0-290	0-144	1174-1618	1398-1641	2277-2890	2072-3174
IQR	0-990	0-850	1050-1769	1170-1960	2211-3212	2070-3315
Range						
Tumour size at progression (mm^2):						
Median	225.5	152	2038	2017.5	2835	3396
IQR	84-815	49-465	1561-2138	1721-2167	2239-3817	2260-3945
Range	9-4554	9-1872	1073-3024	1643-2223	2184-4134	2254-4020
Percentage of lesion growth						
Non-measurable disease at baseline	45	51	1	0	0	0
Tumour growth 0-10%	4	4	2	1	2	2
10-25%	10	6	2	2	0	2
25-50%	13	12	2	4	3	2
>50%	54	56	3	1	0	0
Pre-existing nodular enhancement: N/Y	113 / 13	115 /14	10 / 0	7 / 1	5 / 0	6 / 0
Pre-existing callosal enhancement:N/Y	102 / 19	106/ 23	8 / 2	6 / 2	0 / 5	2 / 4
New enhancing lesion: N/Y	101 / 25	98 / 31	10 / 0	8 / 0	5 / 0	6 / 0

Multiple new enhancing lesions: N/Y	74 / 52	74 / 55	7 / 3	7 / 1	4 / 1	5 / 1
Mass-effect compared to baseline						
Increased	104	94	10	7	3	6
Stable	17	22	0	0	1	0
Decreased	5	13	0	1	1	0
FLAIR-SI compared to baseline						
Hyperintensity	110	104	10	5	4	6
Isointensity	8	11	0	1	1	0
Hypointensity	8	14	0	2	0	0
Enhancement crosses midline: N/Y	112 / 14	119 / 10	8 / 2	5 / 3	1 / 4	2 / 4
Increased marginal enhancement of surgical cavity: N/Y	31 / 95	46 / 83	4 / 6	1 / 7	2 / 3	1 / 5
New callosal enhancement: N/Y	106 / 20	115 / 14	9 / 1	5 / 3	0 / 5	1 / 5
New/increased enhancement septum pellucidum: N/Y	118 / 8	127 / 2	10 / 0	8 / 0	3 / 2	3 / 3
New or increased subependymal enhancement: N/Y	68 / 58	82 / 47	2 / 8	0 / 8	0 / 5	0 / 6
New nodular enhancement: N/Y	17 / 109	21 / 108	4 / 6	3 / 5	3 / 2	2 / 4
Necrotic component: N/Y	14 / 112	30 / 99	1 / 9	1 / 7	2 / 3	0 / 6
Soap bubble enhancement: N/Y	27 / 99	50 / 79	2 / 8	1 / 7	0 / 5	1 / 5
Swiss cheese enhancement: N/Y	111 / 15	114 / 15	3 / 7	6 / 2	2 / 3	2 / 4
Spreading wavefront pattern: N/Y	77 / 49	94 / 35	2 / 8	2 / 6	2 / 3	2 / 4
T1-SI compared to WM						
Hyperintensity	2	1	0	0	0	1
Isointensity	16	17	0	0	0	0
Hypointensity	106	109	10	8	5	5
FLAIR-abnormalities compared to WM						
Increased / Stable or Decreased	120 / 6	118 / 9	9 / 1	7 / 1	5 / 0	5 / 1
ADC-SI compared to WM						
Hyperintensity	83	98	5	6	0	2
Isointensity	26	21	2	1	3	1
Hypointensity	13	8	3	1	2	3

***PD** = progressive disease**. TIE =** treatment-induced effects. **IQR** = interquartile range, **95%-CI =** 95% confidence interval. **RT/CT** = radiotherapy with chemotherapy. **EQD2 =** absorbed biological radiation doses. **WM** = white matter. **SI** = signal intensity.* **N/Y** = No/Yes

eTable 6. Logistic regression analysis for the subgroup tumour size with lesions <1000 mm^2					
Variable	**Univariable analysis**		**Multivariable analysis**		
	OR (95%-CI)	**P**	**B**	**OR**	**P**
Sex (ref = male)	1.23 (0.74–2.07)	0.426	0.09	1.10	0.792
Age: (ref = ≤49 years)		0.073			0.132
50-59 years	0.58 (0.28–1.19)	0.138	-0.38	0.68	0.414
60-69 years	1.12 (0.56–2.22)	0.749	0.39	1.48	0.394
≥70 years	1.55 (0.64–3.76)	0.328	0.77	2.15	0.218
Type of operation: (ref = biopsy)		0.620			0.612
Complete resection	1.15 (0.50–2.63)	0.744	0.61	1.84	0.350
Debulking	0.85 (0.42–1.71)	0.650	0.32	1.37	0.586
Histological tumour type: (ref = astrocytoma)		0.525			0.502
Oligodendroglioma	0.25 (0.02–2.76)	0.258	-0.64	0.53	0.670
Oligoastrocytoma	1.60 (0.36–7.07)	0.535	0.08	1.08	0.941
Glioblastoma	0.97 (0.35–2.69)	0.958	0.87	2.39	0.319
Type of treatment: RT / CT* (ref = RT)	0.43 (0.21–0.85)	**0.016**	-0.74	0.48	0.226
EQD2	0.72 (0.54–0.95)	**0.022**	-0.39	0.68	**0.019**
Time to progression: (ref=0–3months)		**0.016**			**0.001**
3 – 5 months	1.55 (0.66–3.67)	0.314	0.72	2.05	0.225
> 5 months	2.39 (1.31–4.37)	**0.005**	1.75	5.75	**0.000**
Clinical deterioration*	1.43 (0.84–2.40)	0.185	-0.12	0.89	0.741
Tumour size at baseline	1.00 (1.00–1.00)	**0.008**	0.00	1.00	0.075
Tumour size at progression	1.00 (1.00–1.00)	**0.004**			
Percentage of lesion growth (ref = Non-measurable disease)		0.846			0.442
Tumour growth 0-10%	1.13 (0.27–4.80)	0.865	-1.18	0.31	0.243
10-25%	1.89 (0.64–5.61)	0.252	0.25	1.29	0.731
25-50%	1.23 (0.51–2.96)	0.648	-0.77	0.47	0.266
>50%	1.09 (0.63–1.89)	0.751	-0.57	0.57	0.180
Pre-existing nodular enhancement*	0.95 (0.43–2.10)	0.890	0.80	0.14	2.215
Pre-existing callosal enhancement*	0.86 (0.44–1.67)	0.653			
New enhancing lesion*	0.78 (0.43–1.42)	0.420			
Multiple new enhancing lesions*	0.95 (0.58–1.56)	0.825	0.60	1.82	0.110
Mass-effect compared to baseline: (ref = decreased)		0.109			
Increased	2.88 (0.99–8.37)	0.053			
Stable	2.01 (0.60–6.74)	0.258			
FLAIR-signal intensity compared to baseline (ref = Hypointensity)		0.332			0.579
Hyperintensity	1.85 (0.75–4.59)	0.184	0.55	1.73	0.353
Isointensity	1.27 (0.36–4.48)	0.707	0.14	1.15	0.878
Enhancement crosses midline*	1.49 (0.64–3.49)	0.361			
Increased marginal enhancement of surgical cavity*	1.70 (0.99–2.92)	0.056	0.86	2.35	0.051
New callosal enhancement*	1.55 (0.75–3.22)	0.241	0.22	1.25	0.684
New or increased enhancement septum pellucidum*	4.31 (0.90–20.69)	0.068	1.17	3.23	0.352
New or increased subependymal enhancement*	1.49 (0.90–2.46)	0.120	-0.16	0.85	0.653
New nodular enhancement*	1.25 (0.62–2.49)	0.533	0.60	1.81	0.209
Necrotic component*	2.42 (1.22–4.83)	**0.012**			
Soap bubble enhancement*	2.32 (1.33–4.04)	**0.003**	0.92	2.50	**0.031**
Swiss cheese enhancement*	1.03 (0.48–2.20)	0.945	0.31	1.37	0.551

Spreading wavefront pattern*	1.71 (1.01–2.90)	**0.047**	0.11	1.11	0.755
T1-signal intensity compared to white matter		0.837			0.227
(ref = Hypointensity)					
Hyperintensity	2.06 (0.18–23.02)	0.558	1.58	4.87	0.358
Isointensity	0.97 (0.47–2.02)	0.930	0.83	2.29	0.120
FLAIR-abnormalities compared to white matter*	1.53 (0.53–4.42)	0.437	0.51	1.66	0.483
ADC-signal intensity compared to white matter		0.243			
(ref = hyperintensity)					
Isointensity	1.46 (0.77–2.79)	0.249	0.94	2.55	0.135
Hypointensity	1.92 (0.76–4.85)	0.169	0.57	1.76	0.202

***OR** = Odds ratio, **B** = B-value**, 95%-CI =** 95% confidence interval. **RT**= radiotherapy. **RT/CT** = radiotherapy with chemotherapy. **EQD2 =** absorbed biological radiation doses. **ref** = reference category**. Hosmer and Lemeshow goodness of fit**: p = 0.418. **Area under the ROC Curve** = 0.789. Determinants marked with *: for dichotomous determinants, the no value was the reference. Statistically significant p-values (p) are marked in bold.*

eTable 7. Subgroup clinical and/or radiological follow-up						
Variable	**Number of lesions n**=224		**Univariable analysis**		**Multivariable analysis**	
			OR (95%-CI)	**P**	**OR (95%-CI)**	**P**
	PD n=97	**TIE** n=127				
Sex: Male (ref)/ Female	57 / 40	92 / 35	1.85 (1.05 – 3.23)	**0.032**	1.87 (0.87-4.03)	0.112
Age (years)				0.060		0.275
≤49 years	17	23	reference		reference	
50-59 years	20	45	0.60 (0.27–1.36)	0.223	0.54 (0.17-1.68)	0.285
60-69 years	41	45	1.23 (0.58–2.63)	0.588	0.89 (0.31-2.56)	0.826
≥70 years	19	14	1.84 (0.72–4.67)	0.202	1.71 (0.45-6.50)	0.434
Type of operation				0.453		0.670
Complete resection	15	21	0.69 (0.29–1.62)	0.392	1.46 (0.35-6.00)	0.604
Debulking	56	81	0.67 (0.35–1.27)	0.215	1.66 (0.54-5.13)	0.378
Biopsy	26	25	reference		reference	
Histological tumour type				0.343		0.303
Astrocytoma	5	9	reference		reference	
Oligodendroglioma	1	4	0.45 (0.04–5.21)	0.523	1.21 (0.07-21.03)	0.896
Oligoastrocytoma	5	2	4.50 (0.63–32.30)	0.135	0.78 (0.03-18.06)	0.879
Glioblastoma	86	112	1.38 (0.45–4.27)	0.574	4.26 (0.75-24.10)	0.101
Type of treatment						
RT monotherapy	28	13	reference		reference	
RT / CT	69	114	0.28 (0.14-0.58)	**0.001**	0.40 (0.12-1.35)	0.139
EQD2 (Gy): Median (IQR)	60 (59-60)	60 (60-60)			0.69 (0.48-0.99)	**0.043**
Range	42 - 60	51 - 60	0.63 (0.44–0.90)	**0.011**		
Time to progression (months after RT):				0.238		0.266
0 – 3 months	70	96	reference		reference	
3 – 5 months	6	13	0.63 (0.23–1.75)	0.377	0.51 (0.11-2.33)	0.381
> 5 months	21	18	1.60 (0.79–3.23)	0.189	1.97 (0.66-5.89)	0.224
Clinical deterioration*: N/Y	56 / 41	92 / 35	1.92 (1.10–3.37)	**0.022**	1.47 (0.67-3.22)	0.342
Tumour size at baseline (mm^2)				0.404		0.240
< 1000	83	115	0.87 (0.26–2.93)	0.817	2.44 (0.31-18.86)	0.394
1000 – 2000	9	6	1.80 (0.37–8.67)	0.464	5.86 (0.65-52.79)	0.115
2000 <	5	6	reference		reference	
Tumour size at progression(mm^2)						
Median (IQR)	221 (77-1032)	180 (50-550)	1.00 (1.00–1.00)	0.107		
Range	9-4554	9-4020				
Percentage of lesion growth				0.853		0.506
Non-measurable disease at baseline	34	43	reference		reference	
Tumour growth 0-10%	7	7	1.27 (0.40–3.96)	0.686	0.95 (0.21-4.29)	0.943
10-25%	7	10	0.89 (0.31–2.57)	0.823	0.46 (0.11-1.94)	0.293
25-50%	15	15	1.27 (0.54–2.95)	0.586	0.58 (0.17-1.99)	0.389
>50%	34	52	0.83 (0.44–1.54)	0.550	0.45 (0.18-1.13)	0.088
Pre-existing nodular enhancement*: N/Y	89 / 8	113 / 14	0.73 (0.29–1.81)	0.490	2.36 (0.70-7.97)	0.166

Pre-existing callosal enhancement*: N/Y	70 / 22	101 / 26	1.22 (0.64–2.33)	0.544		
New enhancing lesion*: N/Y	75 / 22	101 / 26	1.14 (0.60–2.16)	0.690		
Multiple new enhancing lesions*: N/Y	47 / 50	73 / 54	1.44 (0.85–2.45)	0.180	1.90 (0.87-4.13)	0.106
Mass-effect compared to baseline				0.649		
Increased	77	95	1.62 (0.53–4.94)	0.396		
Stable	15	22	1.36 (0.39–4.80)	0.629		
Decreased	5	10	reference			
FLAIR-SI compared to baseline				0.348		0.284
Hyperintensity	85	102	1.81 (0.66–4.95)	0.251	2.61 (0.63-10.78)	0.186
Isointensity	6	12	1.08 (0.27–4.29)	0.909	4.51 (0.67-30.60)	0.123
Hypointensity	6	13	reference		reference	
Enhancement crosses midline*: N/Y	82 / 15	112 / 15	1.37 (0.63–2.96)	0.428		
Increased marginal enhancement of surgical cavity*: N/Y	34 / 63	42 / 85	0.92 (0.52–1.60)	0.756	1.42 (0.55-3.68)	0.468
New callosal enhancement*: N/Y	76 / 21	108 / 19	1.57 (0.79–3.12)	0.197	1.08 (0.33-3.49)	0.897
New or increased enhancement septum pellucidum*: N/Y	88 / 9	122 / 5	2.50 (0.81–7.70)	0.112	2.86 (0.43-19.07)	0.278
New or increased subependymal enhancement*: N/Y	46 / 51	76 / 51	1.65 (0.97–2.82)	0.065	1.64 (0.75-3.60)	0.218
New nodular enhancement*:N/Y	18 / 79	23 / 104	0.97 (0.49–1.92)	0.932	1.47 (0.59-3.71)	0.410
Necrotic component*: N/Y	14 / 83	27 / 100	1.60 (0.79–3.25)	0.193		
Soap bubble enhancement*: N/Y	23 / 74	45 / 82	1.77 (0.98–3.19)	0.060	2.36 (0.95-5.84)	0.063
Swiss cheese enhancement*:N/Y	80 / 17	108 / 19	1.21 (0.59–2.47)	0.605		
Spreading wavefront pattern*: N/Y	59 / 38	88 / 39	1.45 (0.83–2.53)	0.187	0.95 (0.44-2.06)	0.898
T1-SI compared to WM				0.817		0.444
Hyperintensity	2	2	1.34 (0.18–9.70)	0.774	1.80 (0.09-36.76)	0.701
Isointensity	15	16	1.25 (0.59–2.69)	0.560	2.03 (0.67-6.14)	0.211
Hypointensity	80	107	reference		reference	
FLAIR-abnormalities compared to WM: Increased	92	114	1.78 (0.60–5.29)	0.303	6.49 (1.24-33.92)	**0.027**
Stable or Decreased	5	11	reference		reference	
ADC-SI compared to WM				**0.040**		**0.028**
Hyperintensity	57	94	reference		reference	
Isointensity	24	21	1.89 (0.96–3.69)	0.064	2.54 (1.00-6.45)	0.050
Hypointensity	15	10	2.47 (1.04–5.88)	**0.040**	4.31 (1.19-15.55)	**0.026**

***PD** = progressive disease. **TIE =** treatment-induced effects. **95%-CI =** 95% confidence interval. **RT =** radiotherapy. **RT/CT** = radiotherapy with chemotherapy. **EQD2 =** absorbed biological radiation doses. **IQR** = interquartile range. **WM** = white matter. **SI** = signal intensity.* **N/Y** = No/Yes. *Determinants marked with *: for dichotomous determinants, the no value was the reference. Statistically significant p-values (**p**) are marked in bold. **Hosmer & Lemeshow goodness of fit**: p = 0.722. **Area under the ROC Curve** = 0.802 (95%-CI = 0.74 - 0.86).*

eTable 8: Subgroup astrocytomas, oligodendrogliomas and oligoastrocytomas				
Variable	**Number of lesions** n=35		**Univariable analysis**	
	PD n=17	**TIE** n=18	**OR (95%-CI)**	**p**
Sex: Male / Female	10 / 7	9 / 9		
Age (years): ≤49 years	6	6		
50-59 years	6	8		
60-69 years	4	3		
≥70 years	1	1		
Type of operation: Biopsy	6	7		
Complete resection	2	4		
Debulking	9	7		
Histological tumour type: Astrocytoma	8	9		
Oligodendroglioma	1	4		
Oligoastrocytoma	8	5		
Type of treatment: RT / CT (RT monotherapy)	3 (14)	12 (6)		
EQD2 (Range in Gy)	51 - 60	51 - 60	0.81 (0.63–1.04)	0.091
Clinical deterioration: N/Y	9 / 8	16 / 2		
Time to progression (months after RT): (ref = 0–3months)	6	8		0.785
3 – 5 months	0	1	/	/
> 5 months	11	9	1.63 (0.41-6.46)	0.487
Tumour size at baseline (mm^2): < 1000	17	17		
1000 – 2000	0	0		
>2000	0	1		
Tumour size at progression (Range in mm^2)	9 - 3172	12 - 2254		
Lesion growth (%): Non-measurable disease at baseline	11	13		
Tumour growth 0-10%	0	2		
10-25%	0	0		
25-50%	0	1		
>50%	6	2		
Pre-existing nodular enhancement: N/Y	17 / 0	15 / 3		
Pre-existing callosal enhancement: N/Y	12 / 0	17 / 1		
New enhancing lesion: N/Y	10 / 7	12 / 6		
Multiple new enhancing lesions*: N/Y	8 / 9	11 / 7	1.77 (0.46–6.78)	0.406
Mass-effect compared to baseline scan: Decreased	0	0		
Increased	15	11		
Stable	2	7		
FLAIR-SI compared to baseline: Hypointensity	0	1		
Isointensity	3	4		
Hyperintensity	14	13		
Enhancement crossing the midline: N/Y	15 / 2	18 / 0		
Increased marginal enhancement of surgical cavity*: N/Y	9 / 8	10 / 8	1.11 (0.29–4.21)	0.877
New callosal enhancement: N/Y	16 / 1	17 / 1		
New enhancement septum pellucidum: N/Y	16 / 1	18 / 0		
New/increased subependymal enhancement: N/Y	11 / 6	12 / 6		
New nodular enhancement: N/Y	2 / 15	1 / 17		
Necrotic component: N/Y	2 / 15	5 / 13		
Soap bubble enhancement*: N/Y	3 / 14	12 / 6	9.33 (1.91–45.58)	**0.006**
Swiss cheese enhancement: N/Y	15 / 2	17 / 1		
Spreading wavefront pattern: N/Y	13 / 4	18 / 0		
T1-SI compared to WM: Hypointensity	11	13		
Hyperintensity	0	1		
Isointensity	5	3		
FLAIR-abnormalities compared to WM: Increased	17	16		

Stable or Decreased	0	1		
ADC-SI compared to WM:				0.979
Hyperintensity	11	13	reference	
Isointensity	4	4	1.18 (0.24–5.86)	0.838
Hypointensity	1	0	/	

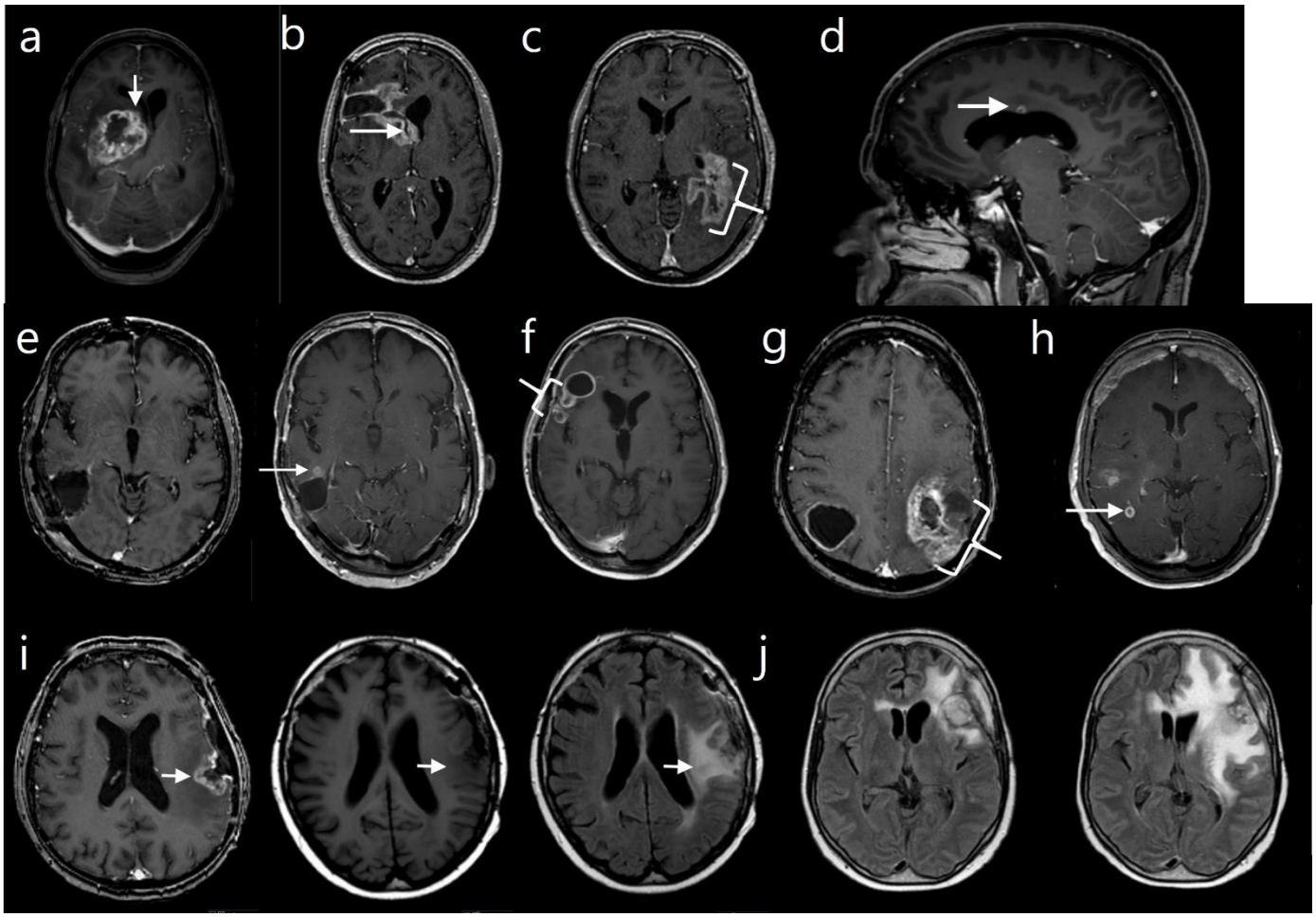
***PD**=progressive disease**. TIE=**treatment-induced effects**. ref**=reference category. **SI**=signal intensity. **RT**=Radiotherapy. **CT**=Chemotherapy. **OR**=odds ratio. **95%-CI=**95% confidence interval. **EQD2=**absorbed biological radiation doses. **WM**=White matter.* **N/Y** *= No/Yes. Determinants marked with* (dichotomous determinants): the no-value was the reference. Statistically significant p-values (**p**) are bolded. **ref** = reference.*

eTable 9. Subgroup histological reference test						
Variable	**Histology** n=60		**Univariable analysis**		**Multivariable analysis**	
	PD=44	**TIE**=16	**OR (95%-CI)**	**p**	**OR (95%-CI)**	**p**
Sex: Male / Female	35 / 9	5 / 11				
Age (years): ≤49 years	14	8				
50-59 years	13	4				
60-69 years	14	4				
≥70 years	3	0				
Type of operation: Biopsy	2	1				
Complete resection	14	4				
Debulking	28	11				
Histological tumour type: Astrocytoma	3	0				
Oligodendroglioma	0	0				
Oligoastrocytoma	3	3				
Glioblastoma	38	13				
Type of treatment*: RT/CT (RT monotherapy)	5 (39)	1 (15)				
EQD2: Median (IQR)	60 (60)	60 (60) 60	/	/	/	/
Range in Gy	56 - 60					
Clinical deterioration: N/Y	29 / 15	8 / 8				
Time to progression (months after RT):				0.221		0.222
(ref = 0-3months)	14	9				
3 – 5 months	7	1	4.5 (0.47–42.97)	0.191	1.81 (0.15-21.39)	0.637
> 5 months	23	6	2.46 (0.72–8.42)	0.150	4.00 (0.84-19.15)	0.083
Tumour size at baseline (mm^2): (ref =	0	0				
>2000)	43	14				
< 1000	1	2				
1000 – 2000						
Tumour size at progression: Median	469 (204-	264 (70-				
(IQR)	1020)	1160)				
Range in mm^2	63-3172	24-2091				
Lesion growth (%):						
Non-measurable disease at baseline	12	8				
Tumour growth 0-10%	1	0				
10-25%	5	0				
25-50%	3	3				
>50%	23	5				
Pre-existing nodular enhancement: N/Y	39 / 5	15 / 1				
Pre-existing callosal enhancement: N/Y	40 / 4	13 / 3				
New enhancing lesion: N/Y	41 / 3	11 / 5				
Multiple new enhancing lesions*: N/Y	38 / 6	13 / 3	0.68 (0.15–3.14)	0.625	1.61 (0.22-11.69)	0.637
Mass-effect compared to baseline scan:						
Decreased	1	4				
Increased	40	12				
Stable	3	0				
FLAIR-SI compared to baseline:	2	3				
Hypointensity	39	13				
Hyperintensity	3	0				
Isointensity						
Enhancement crossing the midline: N/Y	39 / 5	14 / 2				
Increased marginal enhancement of surgical cavity*: N/Y	3 / 41	6 / 10	8.20 (1.74–38.59)	**0.008**	8.67 (1.34-56.12)	**0.023**
New callosal enhancement: N/Y	39 / 5	13 / 3				

New enhancement septum pellucidum: N/Y	43 / 1	16 / 0				
New/increased subependymal enhancement: N/Y	24 / 20	6 / 10				
New nodular enhancement: N/Y	6 / 38	3 / 13				
Necrotic component: N/Y	3 / 41	4 / 12				
Soap bubble enhancement*: N/Y	6 / 38	7 / 9	4.93 (1.33–18.26)	**0.017**	6.06 (1.04-35.24)	**0.045**
Swiss cheese enhancement: N/Y	36 / 8	14 / 2				
Spreading wavefront pattern: N/Y	22 / 22	10 / 6				
T1-signal intensity compared to WM: Hypointensity Hyperintensity Isointensity	41 0 1	15 0 1				
FLAIR-abnormalities compared to WM: Increased / Stable or Decreased (ref)	42 / 2	16 / 0				
ADC-signal intensity compared to WM:				0.781		0.565
Hyperintensity	31	12	ref		ref	
Isointensity	7	2	1.36 (0.25–7.47)	0.727	2.50 (0.27-22.81)	0.418
Hypointensity	3	2	0.58 (0.09–3.91)	0.577	0.51 (0.06-4.33)	0.539

***PD**=progressive disease**. TIE=**treatment-induced effects**. ref**=reference category. **SI**=signal intensity. **RT**=Radiotherapy. **CT**=Chemotherapy. **OR**=odds ratio. **95%-CI=**95% confidence interval. **EQD2=**absorbed biological radiation doses. **WM**=White matter. **N/Y**=No/Yes. Determinants marked with*(dichotomous determinants): the no-value was the reference. **Hosmer & Lemeshow goodness of fit:** p=0.554. **Area under the ROC Curve**=0.809 (95%-CI=0.69-0.93). Statistically significant p-values (**p**) are bolded. **ref** = reference category*

eFigure 1: Non-significant MRI characteristics



a. 58-year old woman with a glioblastoma, IDH-status unknown, treated with temozolomide-based chemoradiation (TMZ-CRT): Axial MRI with enhancement crossing the midline.
b. 27-year old man with an IDH-wildtype glioblastoma treated with TMZ-CRT: Axial MRI with enhancement involving the septum pellucidum.
c. 41-year old man with an IDH-wildtype glioblastoma treated with TMZ-CRT: Axial MRI with subependymal enhancement (infiltration in to the borders of the lateral ventricle).
d. 45-year old man with an IDH-mutated astrocytoma grade 4 treated with TMZ-CRT: Sagittal MRI with callosal enhancement.
e. 68-year old man with an IDH-wildtype glioblastoma treated with TMZ-CRT. Left: Baseline MRI. Right: Follow-up MRI (117 days after baseline) with a new nodular enhancement.
f. 49-year old man with an IDH-wildtype glioblastoma treated with TMZ-CRT: Swiss cheese enhancement (more diffuse and larger regions of necrosis compared to soap bubble enhancement).
g. 64-year old woman with an IDH-wildtype glioblastoma treated with radiotherapy: Axial MRI with spreading wavefront pattern (ill-defined instead of well-defined borders of the enhancement).
h. 68-year old woman with a glioblastoma, IDH-status unknown, treated with TMZ-CRT: Presence of a necrosis central in the enhancement.
i. 72-year old woman with an IDH-wildtype glioblastoma treated with radiotherapy. Left: T1-MRI with contrast agent. Middle: T1-MRI without contrast agent with low T1-signal

compared to healthy white matter. Right: T2-FLAIR MRI with high FLAIR-signal compared to healthy white matter.
j. 65-year old woman with a glioblastoma, IDH-status unknown, treated with TMZ-CRT: Left: Baseline T2-FLAIR MRI. Right: Follow-up T2-FLAIR MRI (91 days after baseline): Increased mass- and FLAIR-signal compared to baseline.