Brain Tumor: Glioblastoma with Oligodendroglial Component

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Patient History

A 15 year old boy presented with headache since 1 month and vomiting in the morning since a few weeks (April 2010).

On neurological examination, bilateral papiloedema, bilateral paresis of the 6th cranial nerve and hemi-anopsia were found. He was immediately referred for MRI. A big tumoral mass lesion, partially haemorrhagic, in the right parietal region, with important mass-effect, was found (Figure 1 and 2).

He was taken for surgery the next day and macroscopically a full resection was achieved. The anatomopathological examination was compatible with a glioblastoma (GBM), WHO grade 4, with an oligodendroglial component. Adjuvant concomitant radiochemotherapy (HITGBM-D protocol) was started.

The follow-up MRI examinations remained stable until july 2011 (just at the end of the concomitant chemotherapy) (Figure 3 and 4). A complementary MRI examination (4 weeks later) with perfusion and MRS was then performed.

Imaging Findings

On T2, a hypersignal zone was seen anteriorly-inferiorly of the resection cavity, with hazy contrast enhancement and also affecting the corpus callosum, already clearly increased in comparison to the FU MRI images 1 month before (Figure 5 and 6). This lesion showed diffusion restriction (Figure 8).

On DSC-perfusion, there was an increased CBV at the lesion, crossing the corpus callosum to the left (Figure 9). On MRS the choline peak was extremely high, there was significantly reduced Naa with Cho/Naa >>2. There was also a small lactate peak (Figure 7). The imaging findings were compatible with recurrence of GBM, WHO grade 4.

Discussion

Chemotherapy with Temodal was started.
There was a further radiological and cliniclal deterioration, so chemotherapy with Avastin, instead of Temodal, was given. Nevertheless, there still is radiological and clinical decline to date.

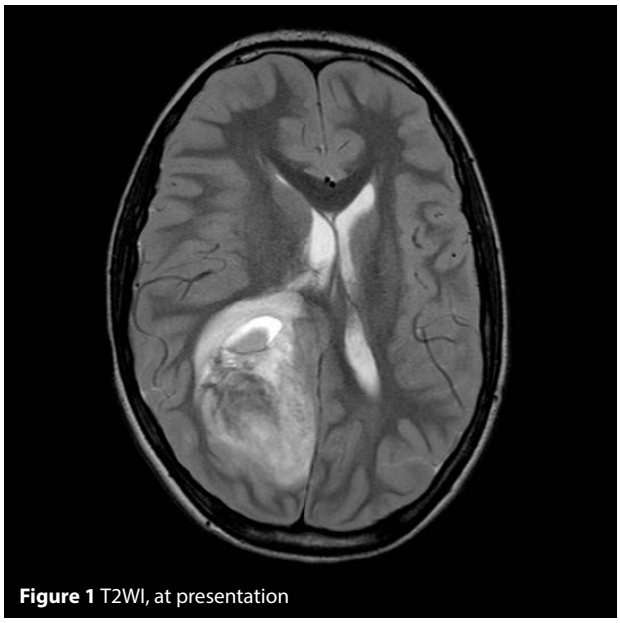


Figure 1 T2WI, at presentation

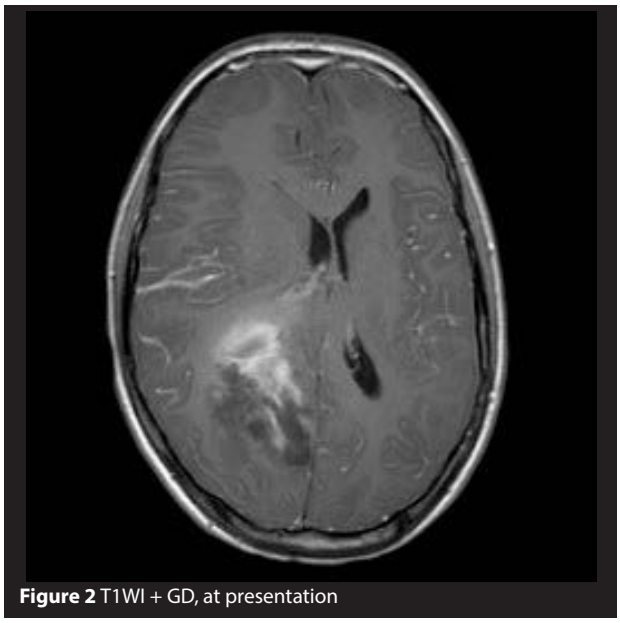


Figure 2 T1WI + GD, at presentation

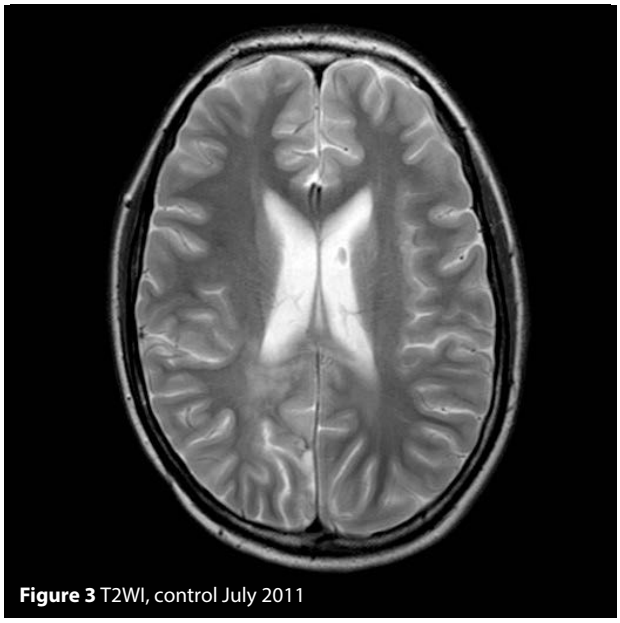


Figure 3 T2WI, control July 2011

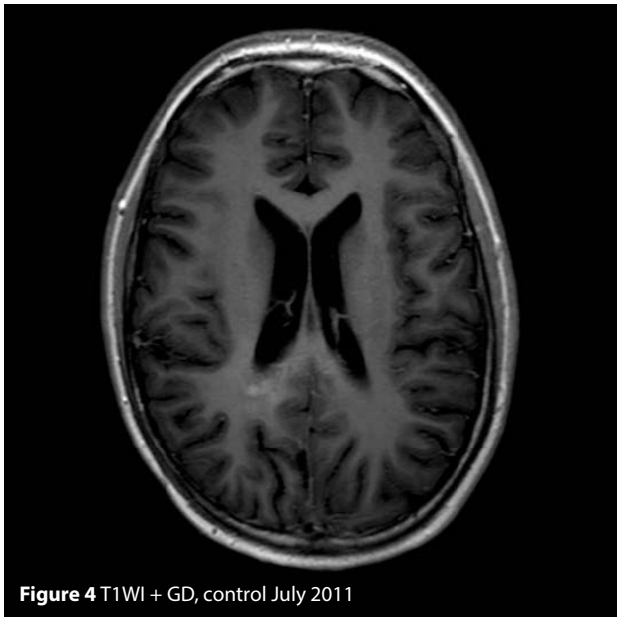


Figure 4 T1WI + GD, control July 2011

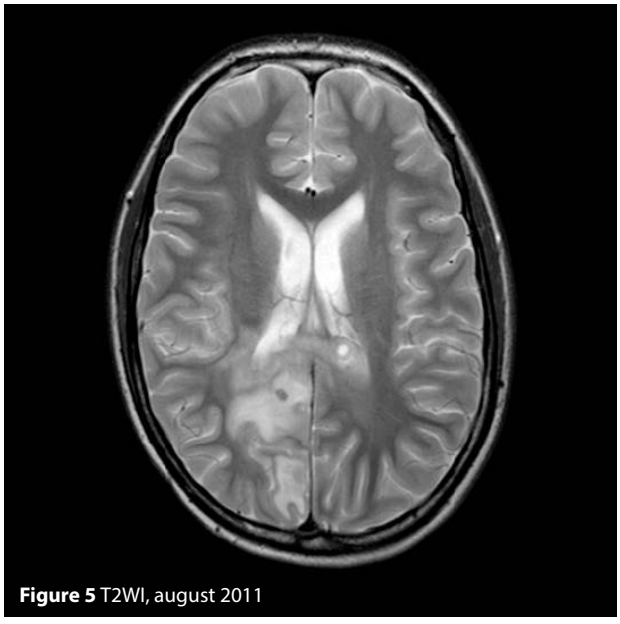


Figure 5 T2WI, august 2011

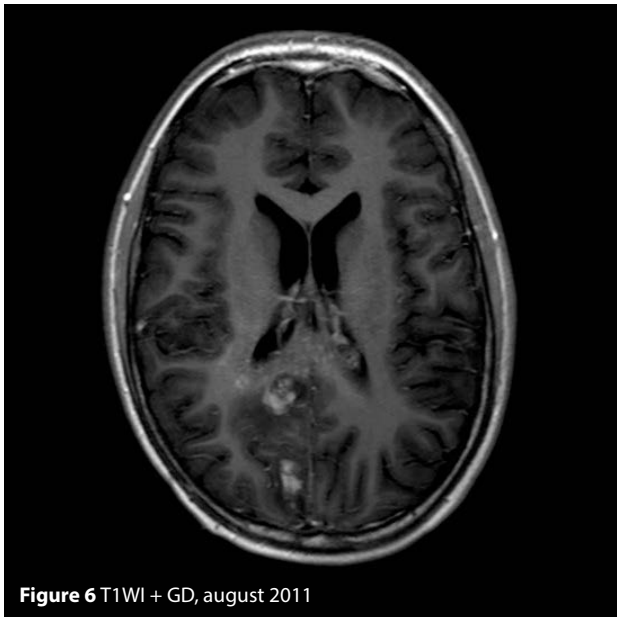


Figure 6 T1WI + GD, august 2011

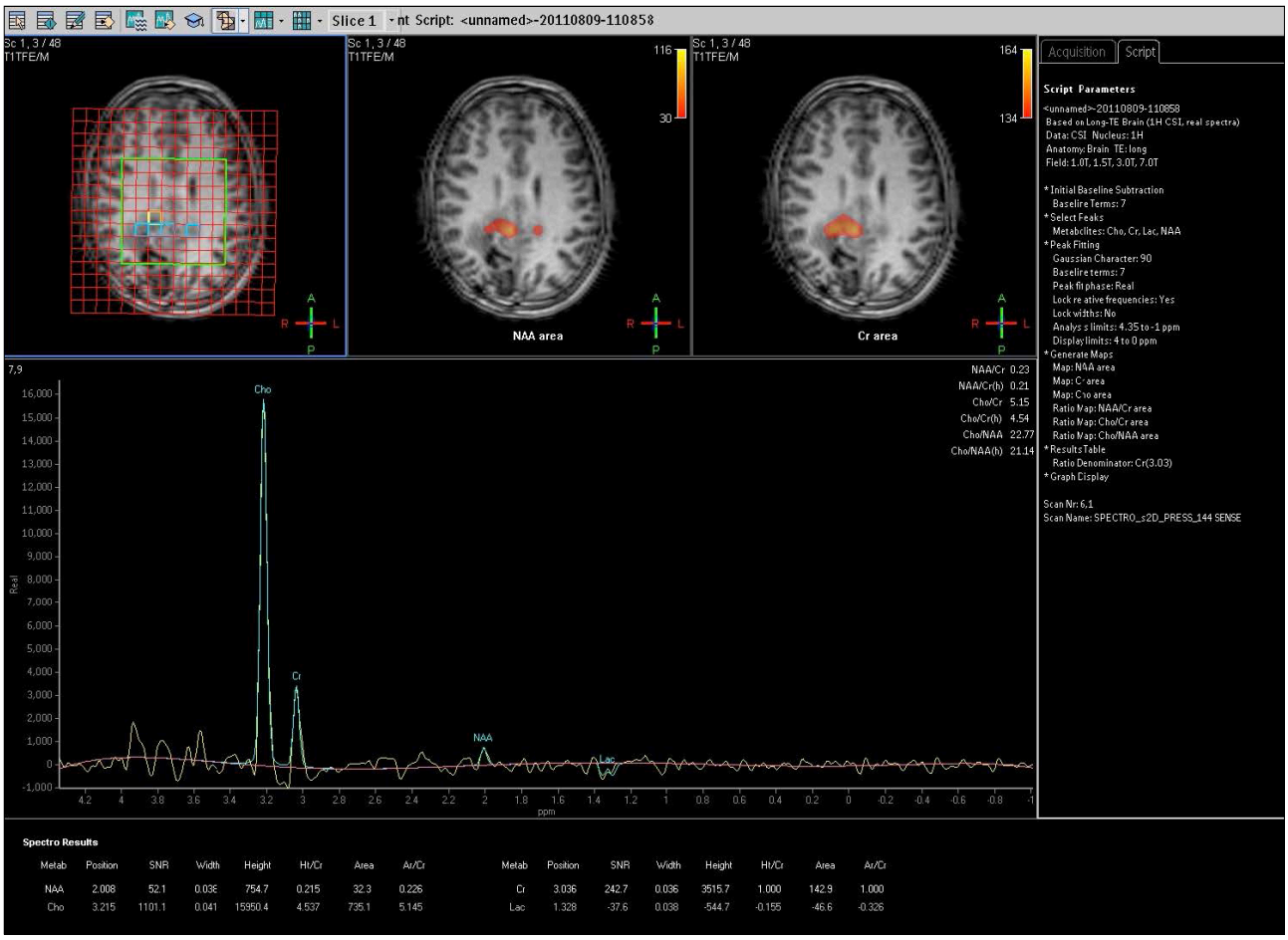
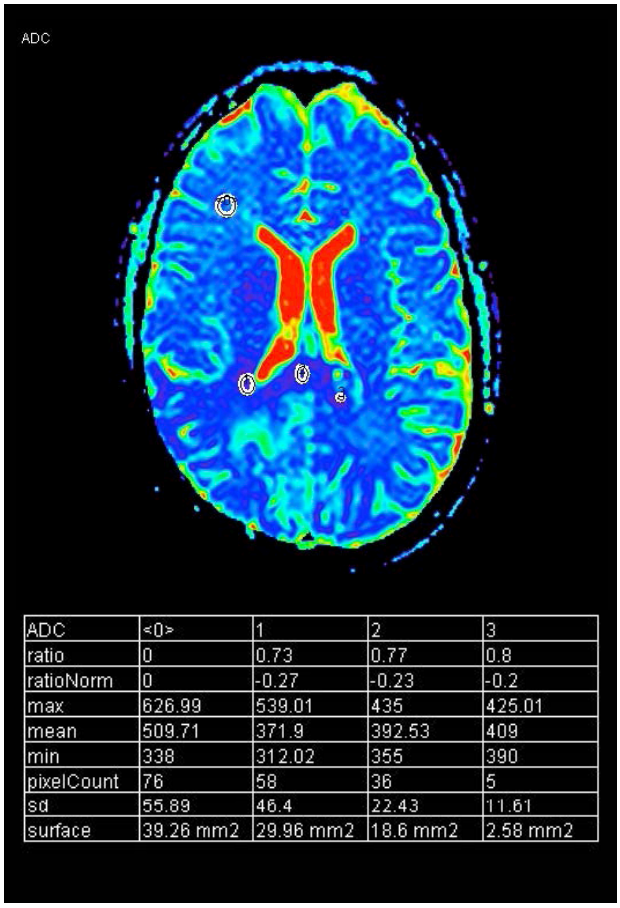
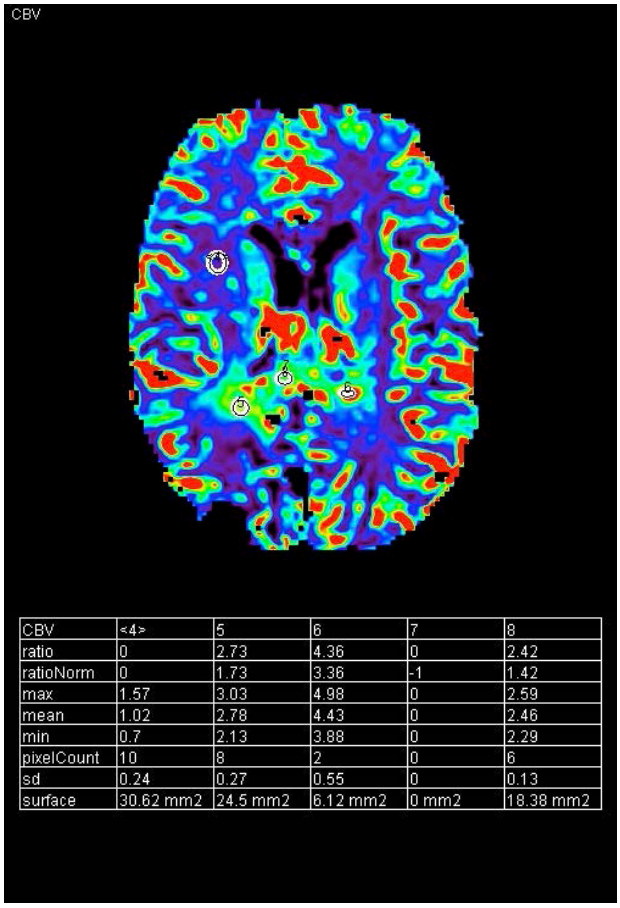


Figure 7 MRS



ADC	<0>	1	2	3
ratio	0	0.73	0.77	0.8
ratioNorm	0	-0.27	-0.23	-0.2
max	626.99	539.01	435	425.01
mean	509.71	371.9	392.53	409
min	338	312.02	355	390
pixelCount	76	58	36	5
sd	55.89	46.4	22.43	11.61
surface	39.26 mm2	29.96 mm2	18.6 mm2	2.58 mm2

Figure 8 ADC map lesion



CBV	<4>	5	6	7	8
ratio	0	2.73	4.36	0	2.42
ratioNorm	0	1.73	3.36	-1	1.42
max	1.57	3.03	4.98	0	2.59
mean	1.02	2.78	4.43	0	2.46
min	0.7	2.13	3.88	0	2.29
pixelCount	10	8	2	0	6
sd	0.24	0.27	0.55	0	0.13
surface	30.62 mm2	24.5 mm2	6.12 mm2	0 mm2	18.38 mm2

Figure 9 CBV lesion

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