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Glioma dissemination along the corticospinal tract

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A 25-year-old right-handed woman, without any medical history, was presented with a two-month history of headaches. Neurological examination was unremarkable apart from signs of intracranial hypertension. The fundoscopy showed bilateral papilledema.

The MRI demonstrated a multifocal heterogeneous mass, involving both frontal lobes, corpus callosum and the basal ganglia on the right-hand side. The mass was hypointense on T1-weighted images, contrast enhanced after gadolinium injection, and hyperintense on T2-weighted and fluid-attenuated inversion recovery (FLAIR) images. The T2-weighted and FLAIR images demonstrated an area of hyperintense signal located along the left corticospinal tract (Figure 1). An incomplete resection of the left frontal part of the tumor was performed. Pathological examination revealed an oligodendroglioma WHO grade III and Sainte Anne Classification grade B [1]. The postoperative management consisted in Temozolomide chemotherapy and external conformational radiotherapy. Six months after surgery, neurological examination revealed a right pyramidal syndrome without any motor deficit. The patient is still under therapy.

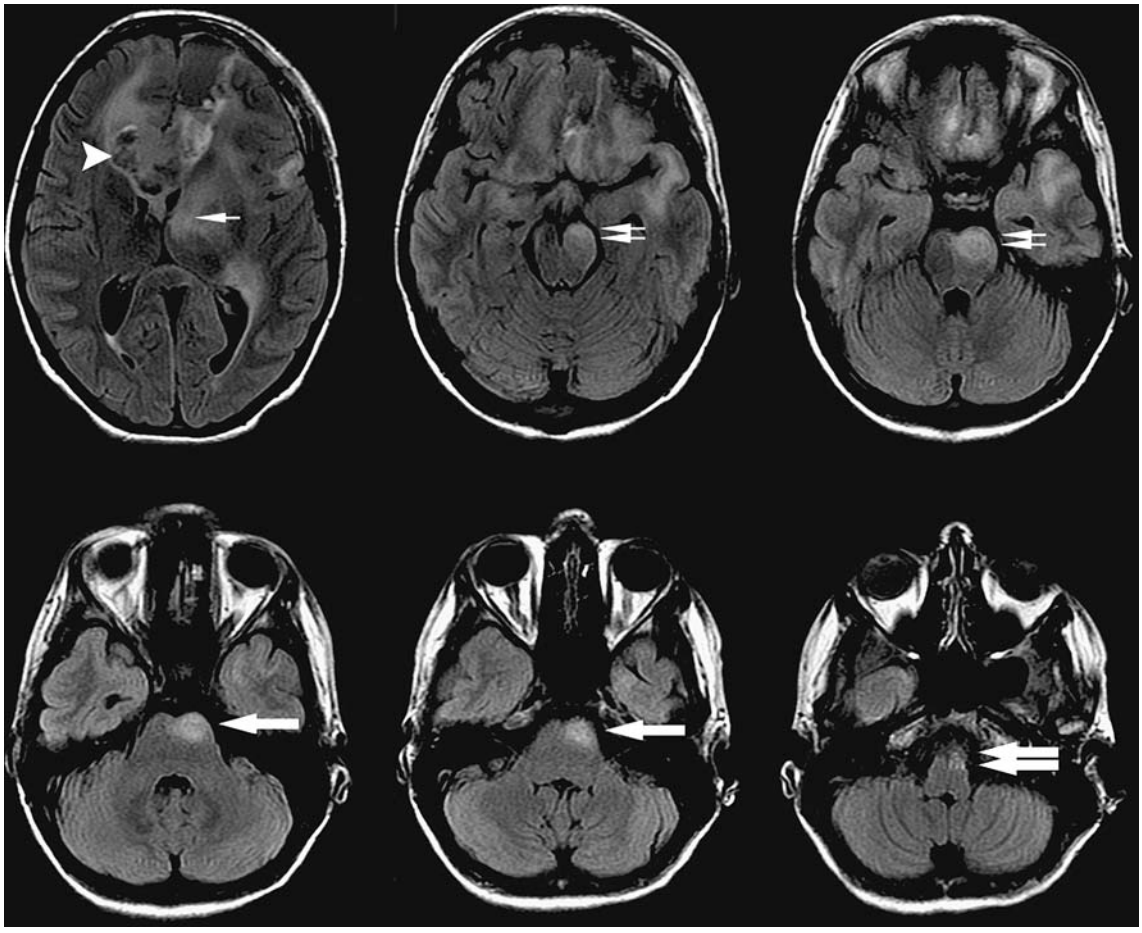

Figure 1. Consecutive postoperative axial fluid-attenuated inversion recovery magnetic resonance images demonstrate the tumor (arrowheads). A hyperintense signal follows the left corticospinal tract from the internal capsule (single thin arrow), the cerebral peduncle (pair of thin arrows), the pons (single thick arrow) to the medulla oblongata (pair of thick arrows).

In these images, the area of hyperintense signal follows the left corticospinal tract from the internal capsule to the medulla oblongata. It is known that glioma cells extend as far as the borders of the hyperintense signal areas shown on T2-weighted or FLAIR images [2]. Thus, these radiological findings are highly suggestive of tumor dissemination along the corticospinal tract. This remarkable case illustrates in clinical practice that glioma cells migrate along myelinated white matter fiber tracts, and use them as preferential ways of dissemination [3]. We conclude that not only do glioma cells migrate along the intra- or inter-hemispheric tracts but they also follow the descending pathways. This specific point was to be underlined.

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