



“The pain is unbearable!”

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Celine, 44, developed recurrent headaches seven months ago and was treated for elevated blood pressure. A few months ago, her headaches worsened and her family noticed weakness on her left side, facial asymmetry and dragging of her left leg. Soon after, Celine started to experience weakness in her left arm, her speech slowed and her family reported some memory loss and comprehension difficulties.

Celine's medical history

- Her medical and family history is unremarkable
- She is right-handed and works on the computer

Clinical investigations

- Celine's magnetic resonance images showed increased signal intensity with contrast enhancement within the right frontal and parietal regions, the right parietal region showing a more discrete amount of enhancement.
- No significant mass effect is present; no hydrocephalus is seen.
- The findings are suggestive of an infiltrative glioma (Figures 1 and 2)

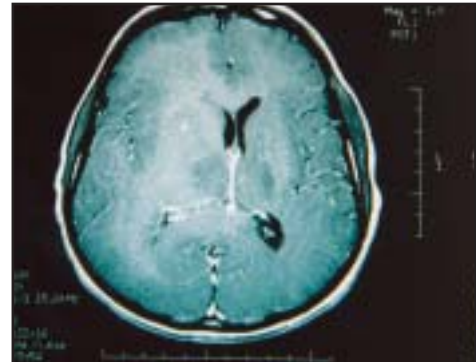


Figure 1. Magnetic resonance image suggesting infiltrative glioma.

What's your diagnosis?

a) Multiple sclerosis

b) Brain metastasis



Figure 2. Magnetic resonance image suggesting infiltrative glioma

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Answer:

High-grade glioma or astrocytoma

About high-grade glioma/astrocytoma

Astrocytomas are tumours that arise from glial brain cells called astrocytes.

Astrocytomas are of two main types—high-grade and low-grade. High-grade tumours grow rapidly, spread easily through the brain, are more aggressive and require intensive therapy. Low-grade astrocytomas are usually localized and grow slowly.

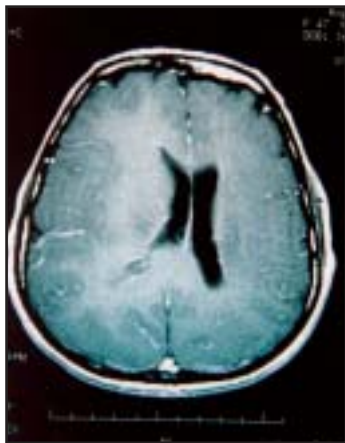


Figure 3. Lobectomy following a few cycles of treatment.

The majority of astrocytic tumours in children are low-grade, whereas the majority are high-grade in adults. These tumours can occur anywhere in the brain or spinal cord. Common sites in children are the cerebellum and the

thalamus or hypothalamus.

Symptoms experienced by patients with cerebellar tumours include headache, vomiting and an unsteady walk. Tumours in the cerebral hemisphere often cause seizures; occasionally, there is weakness of the arms and legs. Tumours in the hypothalamus often cause visual problems, while thalamic tumours cause headaches and arm or leg weakness.

Treatment strategies

Complete surgical removal of the tumour (resection) is the best option when this can be done without damaging the normal, surrounding brain. No further therapy is needed for low-grade astrocytomas that are completely removed.

High-grade astrocytomas can rarely be completely removed as they often affect large areas of the brain by the time symptoms are obvious. All patients with high-grade astrocytomas receive both radiation therapy and chemotherapy regardless of age. Prognosis is poor in this group of patients.

For high-grade tumours, new treatments include the use of new and high doses of chemotherapy drugs, following radiation therapy, and gene therapy to make the tumour cells more sensitive to chemotherapy.

A major treatment problem is that high-dose chemotherapy also kills cells in the bone marrow that produce healthy blood. Gene therapy approaches are being developed to protect bone marrow from these side-effects so more intense chemotherapy can be given to fight rapid tumour growth.

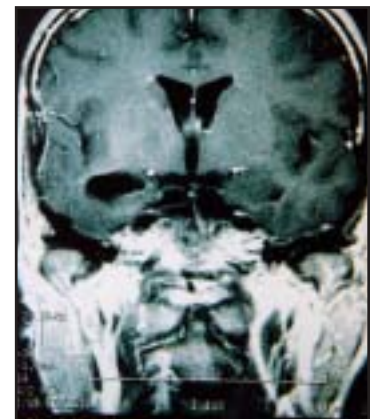


Figure 4. Lobectomy following a few cycles of treatment.

Celine has undergone right temporal lobectomy, followed by cycles of chemotherapy (temozolomide) (Figures 3 and 4). **Dx**

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