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# Neuroimaging Highlight

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## Gliomatosis Cerebri

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A 62-year-old man presented with a history of progressive ataxia. The patient was otherwise well aside from a long history of essential tremor. Physical examination confirmed the presence of ataxia, a wide based gait and bilateral papilledema. MRI demonstrated extensive T2 hyperintensity in the cerebral white

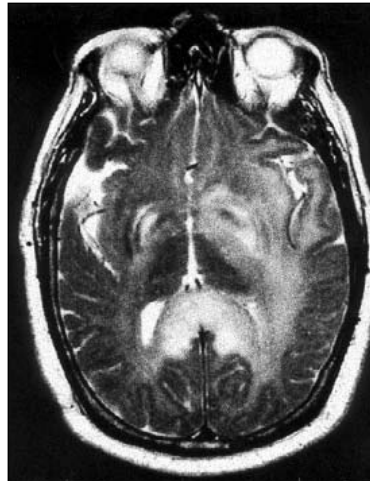
matter bilaterally greater on the left than right with diffuse expansion of the left cerebral hemisphere (Figure 1a). T2 hyperintensity extended into the left basal ganglia, splenium of the corpus callosum and cerebral peduncles (Figures 1b and 1c).

FLAIR images demonstrated signal hyperintensity extending

**Figure 1a:** MR (Axial T2 weighted) image at the level of the lateral ventricles shows diffuse expansion of the left cerebral hemisphere and diffuse white matter signal hyperintensity bilaterally.



**Figure 1b:** MR (Axial T2 weighted) image shows extensive signal abnormality in the basal ganglia and splenium of the corpus callosum which is also expanded.



**Figure 1c:** MR (Axial T2 weighted) image demonstrates expanded cerebral peduncles bilaterally, greater on the left.



**Figure 1d:** MR (Axial FLAIR) image demonstrated hyperintensity in the white matter of the middle cerebellar peduncles bilaterally.



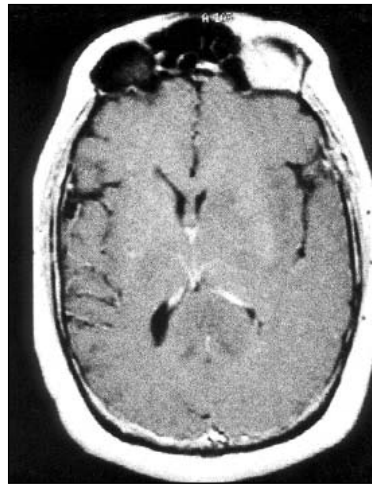
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**Figure 1e:** MR (Axial FLAIR) image demonstrates hyperintensity extending inferiorly to involve the medulla.



**Figure 1f:** MR (Axial T1 weighted gadolinium enhanced) imaged demonstrates the lack of contrast enhancement. Note also the mild mass effect on the left lateral ventricle.



inferiorly to involve the cerebellar peduncles bilaterally and the medulla (Figures 1d and 1e). Gadolinium enhanced T1-weighted images demonstrated no enhancement (Figure 1f). Stereotactic guided biopsy of the splenium revealed diffusely infiltrating glial cells in keeping with a diagnosis of gliomatosis cerebri.

Gliomatosis cerebri is an uncommon manifestation of the most common type of brain tumor, the glioma. The clinical presentation is variable but often includes seizure, headache, personality change and cognitive decline. While CT can be normal or minimally abnormal, MRI typically demonstrates diffuse T2 hyperintensity in at least two, but often three lobes of the brain with extension into the brain stem, basal ganglia and corpus callosum.<sup>1</sup> Due to the diffuse infiltration there may be expansion of the involved brain parenchyma, with preservation of the gross structure of the brain. Gliomatosis is characterized by a lack of significant mass effect, enhancement and necrosis seen in the more common glioblastoma multiforme.<sup>2</sup> Imaging

often underestimates the true extent of tumor found at pathology which typically consists of a low grade glial tumor composed of spindle shaped cells with hyperchromatic nuclei, and little cytoplasm.<sup>2</sup> Like imaging, gross pathology can underestimate the true extent of tumor infiltration in gliomatosis cerebri. The natural history is variable, but the long-term prognosis remains poor. Radiotherapy has been shown to stabilize the clinical symptoms of some patients but patient survival typically is measured in months.<sup>3</sup>

#### REFERENCES

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