78 year-old female with worsened short-term memory.

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CT head without IV contrast
CT head without IV contrast
CT head without IV contrast
T1-weighted MR w/o Gd

T1-weighted MR w/ Gd
Bilateral thalamic glioma

(H3 K27M Mutant)
Mild hypodensity, with loss of gray-white differentiation of the thalamus, bilaterally.
No evidence of acute hemorrhage

CT head without contrast
- Mild hypodensity of the thalamus, bilaterally

- Could this be acute venous infarct from vein of Galen thrombosis?
- Diffuse expansion of the thalamus, bilaterally
- Hypo-intense on T1 w/o Gd enhancement
T2-weighted  

T2-FLAIR  

T2 & T2-FLAIR Hyperintensity
Mostly increased diffusivity
Venous infarct usually has more restriction
Bilateral Thalamic Glioma

Epidemiology

• Primary thalamic gliomas are rare: an incidence of 0.84-5.2% among all intracranial tumors

• Bilateral thalamic gliomas are extremely rare. Most are sporadic, with no identifiable risk factors
Bilateral Thalamic Glioma

Genetics/Risk Factors

• Genetic predisposition: neurofibromatosis, von Hippel-Lindau syndrome, Li-Fraumeni syndrome, familial adenomatous polyposis, mismatch repair deficiency, among other genetic disorders;

• WHO 2016 Classification of Brain Tumors points out common mutation and clinical features with pontine glioma of childhood (H3 K27M Mutation)

• Exposure to ionizing radiation.
Bilateral Thalamic Glioma

Clinical Presentation

- Varying degrees of personality change and/or mental deterioration
- Relative sparing of motor and sensory function
- Focal neurological signs are rare
Bilateral Thalamic Glioma

Diagnosis

• Characteristic Imaging features:
  – CT: hypodense to isodense lesions; potentially with mass effect
  – MRI: T1 hypointense to isointense and T2 homogenously hyperintense lesion
  – Gd enhancement is often not present in grade II bilateral thalamic glioma, but minimal focal uptake has been described in grade III bilateral thalamic glioma.
• Proton MS Spectroscopy: correlate with tumor type and grade
• DDx: venous infarction, viral encephalitis, hypertensive encephalopathy
Bilateral Thalamic Glioma

Treatment

- Surgical: usually limited, due to the eloquence of the area, and the bilateral diffuse involvement of the thalami.
- Diagnosis confirmed by stereotactic biopsy
- Chemotherapy, brachytherapy, chemotherapy
References


