

# Pineal Anaplastic Ependymoma With Multifocal Intradural Extramedullary Metastases on MRI and $^{18}\text{F}$ FDG-PET

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**Abstract:** A 49-year-old woman presented to the emergency room with subacute paraparesis associated with bilateral cervicobrachial neuralgia. Brain and spine MRI revealed a heterogeneous hypervascular pineal tumor and a multifocal thoracolumbar intradural-extramedullary infiltrate with signs of medullary compression. C7-T2 laminectomy was performed on the same day for medullary decompression, allowing for partial lesion excision. Histological examination was in favor of a poorly differentiated anaplastic ependymoma. Two weeks later, FDG-PET showed markedly increased uptake in the pineal mass and significant hypermetabolism of the spinal metastases.

**Key Words:** anaplastic ependymoma, intradural extramedullary metastases, MRI, FDG-PET

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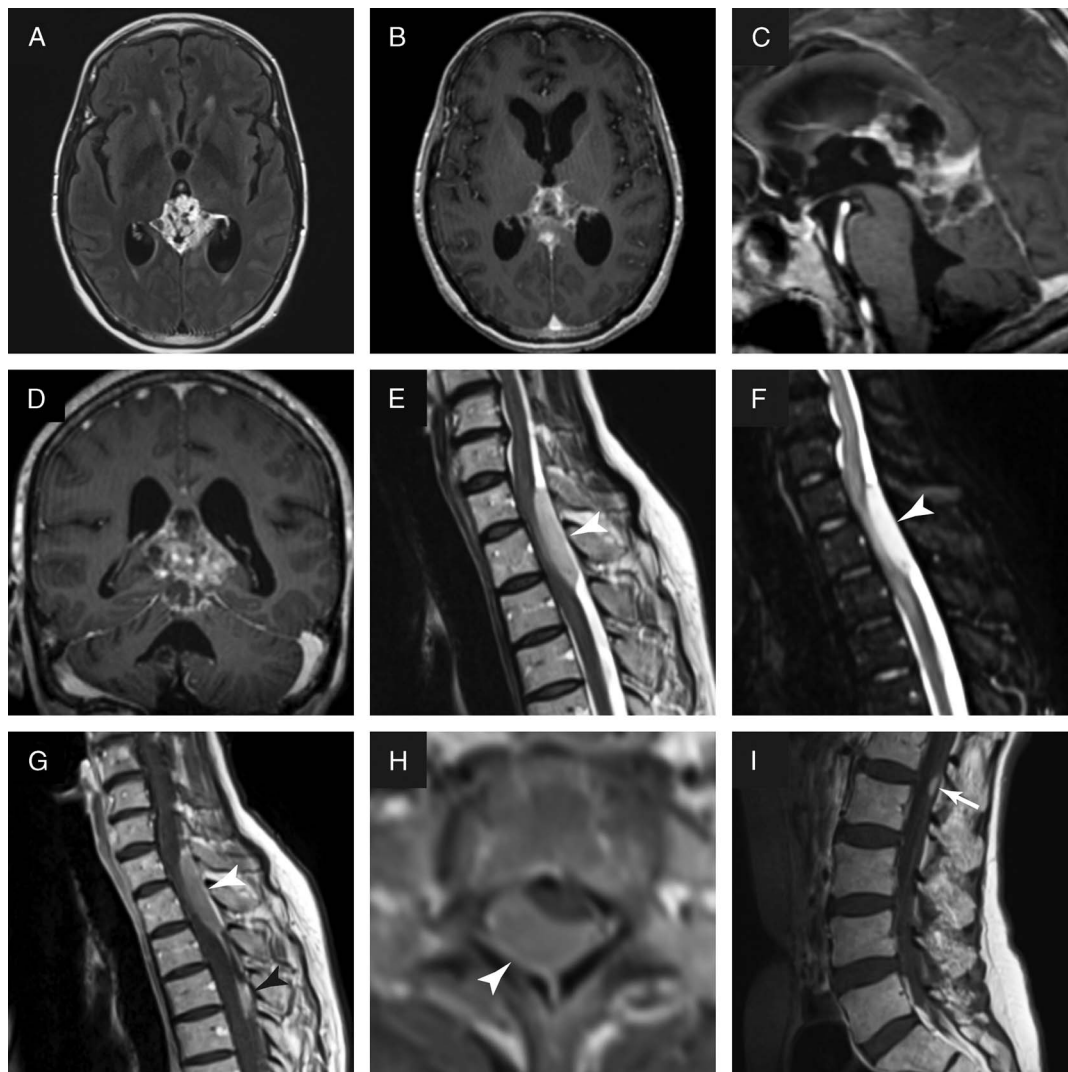
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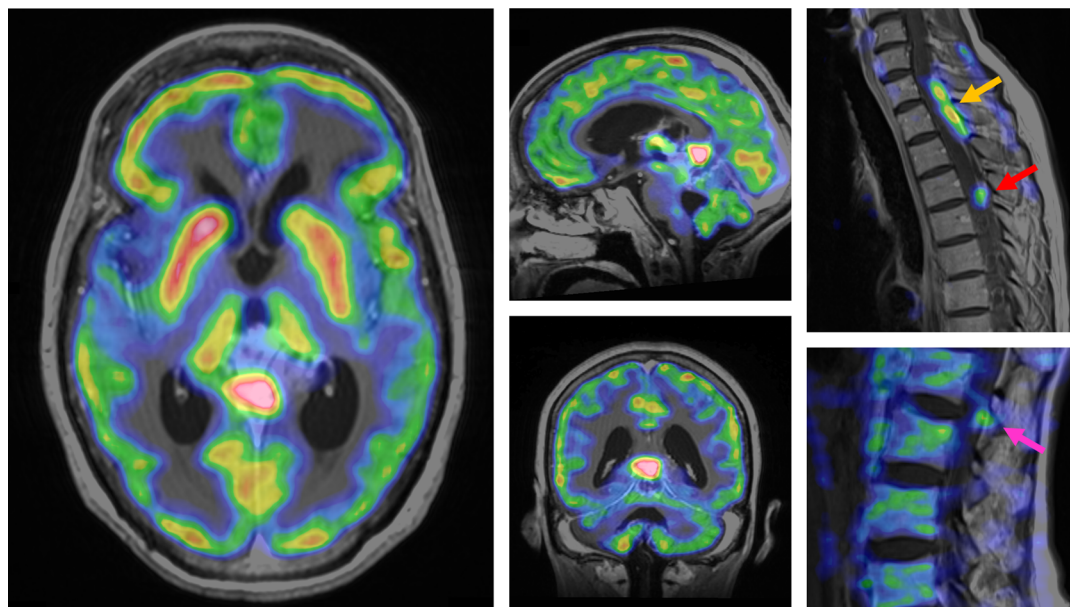
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**FIGURE 1.** MRI of the brain and spine was performed in a 49-year-old woman presenting to the emergency department with subacute paraparesis associated with intense bilateral cervicobrachial neuralgia. Brain MRI (A, FLAIR; B–D, Gd-enhanced T1-weighted) showed a 25-mm heterogeneous hypervascular tumor centered on the pineal region, inducing third ventricle compression and mild ventricular dilation. Cervicothoracic spinal cord MRI (E, T2-weighted; F, STIR; G–H, Gd-enhanced T1-weighted) exhibited a 35 × 7-mm posterior intradural extramedullary lesion (white arrowhead) at the cervicothoracic junction, associated with signs of medullary compression (STIR spinal cord hyperintensities) and a second 10 × 4-mm posterior intradural extramedullary lesion located at the level of T3–T4 (G, black arrowhead). Lumbar spine Gd-enhanced T1-weighted MRI (I) revealed a third intradural extramedullary metastasis (white arrow). C7–T2 laminectomy was performed on the same day for medullary decompression, allowing for partial lesion excision. Histological examination found a glial proliferation with important haemorrhagic suffusion in favor of a poorly differentiated anaplastic ependymoma. Ki67 index was up to 40%. Palliative care was decided and ventriculoperitoneal derivation was performed 1 week later due to acute hydrocephalus. Ependymomas are rare primary gliomas that may affect both children and adults.<sup>1</sup> In adults, supratentorial locations are uncommon (<20%),<sup>2</sup> and the anaplastic type (WHO grade III) accounts for 3% to 5% of ependymal neoplasms.<sup>1</sup> Intradural-extramedullary ependymomas are extremely rare and predominate in women in the fifth decade of life.<sup>3–6</sup> Only two cases of multifocal anaplastic intradural-extramedullary ependymomas have been reported in the literature.<sup>5,6</sup>



**FIGURE 2.** Two weeks after surgery, PET acquisition was performed 60 minutes after IV injection of 171 MBq  $^{18}\text{F}$ FDG. PET images fused with high-resolution Gd-enhanced T1-weighted MRI showed markedly increased FDG uptake in the caudal portion of the pineal tumor (SUVmax, 16) as well as moderately hypermetabolic foci centered on the C7-T2 (yellow arrow; SUVmax, 7), T3-T4 (red arrow; SUVmax, 5), and L1-L2 (pink arrow; SUVmax, 3) intradural extramedullary lesions. No additional hypermetabolic lesion was evidenced. Few studies have reported on FDG-PET findings in cerebral and spinal ependymal neoplasms, some of which focused on pediatric patients.<sup>7-10</sup> There is no consensus regarding the diagnostic and prognostic value of FDG-PET particularly in case of spinal involvement, as PET sensitivity is highly dependent on malignancy grade and lesion size.<sup>8,9</sup> Although data are scarce, quantitative uptake of anaplastic ependymomas seems variable,<sup>8</sup> and there exists to date no report on FDG-PET in intradural extramedullary anaplastic ependymoma. This case report suggests that FDG-PET might prove helpful in determining the cerebral and spinal extension of high-grade multifocal ependymal neoplasms.