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Herpes Simplex Encephalitis in a Patient With Recurrent Pituitary Adenoma Receiving Radiation Therapy

Tien Peng, MD, Jashri Blakeley, MD, Eugenio Cingolani, MD, Elizabeth Griffiths, MD, and Stuart A. Grossman, MD

Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins Hospital, Baltimore, MD.

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A 61-year-old male initially presented with decreased libido and right visual field loss. Evaluation revealed an elevated prolactin level and a pituitary mass consistent with a secretory pituitary adenoma. His tumor progressed on cabergoline and he subsequently underwent transphenoidal tumor debulking. Four years later, his tumor recurred, and a second resection was performed. Postoperatively his dexamethasone was tapered from 16 to 4 mg/d and stereotactic radiation therapy (180 cGy per day to a planned dose of 5040 cGy) was initiated. Two weeks into his radiation, he suddenly began to speak incoherently and had a witnessed seizure with bowel and bladder incontinence while at home. He was evaluated in the hospital where he was found to be dyspneic and febrile to 38.7°C with fluent but nonsensical speech. His baseline bitemporal hemianopsia, right-sided ptosis, and facial droop with incomplete adduction of the right eye were stable. Admission studies revealed a white cell count of 7600/mL and a CD4 count of 104/mm³. Magnetic resonance imaging of the brain demonstrated an unchanged 2.0 × 2.2 × 2.5 cm pituitary mass (Fig. 1). Diffusion-weighted magnetic resonance imaging demonstrated a new area of restricted diffusion in the left mesial temporal lobe with corresponding hyperintensity on FLAIR (Fig. 2). The cerebrospinal fluid (CSF) contained 62 white cells/μL of which 95% were neutrophils, 53 RBC/μL, a protein of 45 mg/dL, and glucose of 81 mg/dL. Phenytoin was prescribed for his witnessed seizure, dexamethasone was increased for peritumoral edema, and given his fevers and CSF findings ceftriaxone, vancomycin and acyclovir were initiated. By day 3 of admission all bacterial and fungal cultures were negative, the CSF herpes simplex virus (HSV) polymerase chain reaction was positive, and other viral polymerase chain reactions were negative. The patient completed a 14-day course of acyclovir and returned to his baseline status, which was fully oriented, conversant, and able to care for himself. He had no further fevers or seizures and continued with the planned radiation therapy.

Change in mental status in patients with primary brain tumors presents a wide differential diagnosis including tumor progression, peritumoral edema, CNS injury related to radiation therapy or chemotherapy, metabolic derangements, vascular events, or infections. Viral encephalitis are often overlooked because they are rare and easily masked by preexisting neurologic deficits. This patient was severely immunocompromised as a result of dexamethasone and cranial irradiation,¹ demonstrated by his low CD4 count. Although animal studies suggest that HSV encephalitis may be more common with immunosuppression,^{2,3} no conclusive studies in human have established this link. The triad of acute mental status changes, seizures, and fevers is classic for HSV encephalitis. This illness deserves special attention as early diagnosis and treatment are critical to preventing death or irreversible neurologic deficits.⁴

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FIGURE 1.

T1 image of the brain demonstrates an unchanged $2.0 \times 2.2 \times 2.5$ cm mass expanding the sella, encasing the cavernous carotids, and invading the cavernous sinuses.

FIGURE 2. Diffusion-weighted magnetic resonance imaging demonstrates a new area of restricted diffusion in the left mesial temporal lobe (A) with corresponding hyperintensity on FLAIR (B).