

Metastatic Thymic Carcinoma on Restaging 18F-Fluorodeoxyglucose Positron Emission Tomography-Computed Tomography

Abstract

Thymic carcinoma is a rare thymic epithelial cancer which is not only locally invasive but also highly aggressive disease. The prognosis for this cancer is poor and the surgery remains the mainstay of treatment. Thymic carcinomas have been shown to metastasize to the lymph nodes, lung, and liver. A 63-year old male who was successfully treated for thymic cancer in 2015, presented with metastatic disease recurrence to the spinal cord. We share interesting images of the spinal cord lesions as well as pituitary metastases that were incidentally detected on restaging 18F-fluorodeoxyglucose positron emission tomography-computed tomography.

Keywords: 18F-fluorodeoxyglucose positron emission tomography-computed tomography, magnetic resonance imaging, metastases, pituitary, spinal cord, thymic carcinoma

A 63-year-old male with a squamous cell variant of thymic carcinoma had complete surgical resection of the tumor and adjuvant chemoradiation in 2015. He was apparently well posttreatment until he presented with progressive left hemiparesis in 2019. Decompressive surgery and radiotherapy were performed for metastatic extradural spinal cord recurrence at the level of C6–C7 vertebrae. Nonetheless, his condition continued to deteriorate and 18F-Fluorodeoxyglucose (18F-FDG) positron emission tomography-computed tomography (PET-CT) was performed to restage the disease. Figure 1a and b show the axial fused PET-CT images of incidental findings of 18F-FDG avid lesions at the pituitary fossa and the left lateral aspect of the pons, respectively, whereas Figure 1c and d show the multiple foci of 18F-FDG avid lesions in the spinal cord at the cervical and lumbar regions (white arrows).

Magnetic resonance imaging of the brain and spine was subsequently performed to assess the pituitary and spinal cord lesions. Figure 2a and b show axial T2-weighted fluid-attenuated inversion recovery (FLAIR) sequence images of the pituitary tumor and extradural lesion at the left prepontine cistern. Figure 2c and d

show the T2-weighted fast relaxation fast spin-echo sequence sagittal images of the extradural and intradural extramedullary drop metastases, respectively. Thymic carcinoma is a rare thymic epithelial cancer occurring with a peak incidence of 1.06/100,000 population in the United States of America.^[1] Thymic carcinomas are highly aggressive, locally invasive, and frequently present in the advanced stages with a 5-year survival of 30%–50%.^[2] Neoadjuvant or adjuvant therapy has been shown to improve survival.^[2,3] However, the choice of chemotherapy for advanced disease is unclear and largely based on recommendations with cisplatin-based chemotherapy being the most common regimen.^[3,4] Recurrence or metastasis occurs in approximately one-third of patients with completely resected thymic carcinoma with the median time from initial surgery to metastasis of 3.6 months; compared to 68.8 months in high-risk thymoma.^[5] Thymic carcinomas frequently metastasize to the regional nodes, lung, liver, adrenal, spleen, bone, and brain.^[2] Although rare, spinal cord metastases have been documented in case reports and case series.^[6] There is limited literature of thymic carcinoma metastases to the pituitary gland.^[7] Our patient was fortunate not to suffer from any pituitary-related complications though he had progressive

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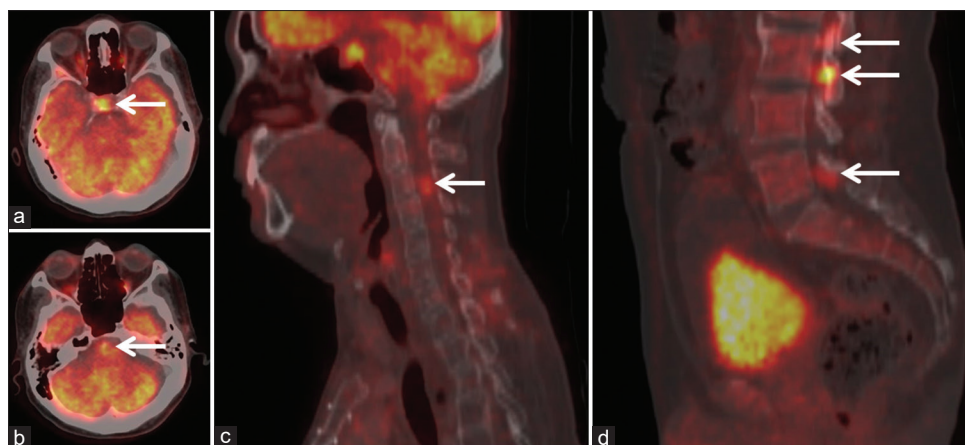
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Figures 1: (a and b) The axial fused positron emission tomography-computed tomography images of incidental findings of 18F-fluorodeoxyglucose avid lesions at the pituitary fossa and the left lateral aspect of the pons respectively whereas (c and d) the multiple foci of 18F-fluorodeoxyglucose avid lesions in the spinal cord at the cervical and lumbar regions (white arrows)

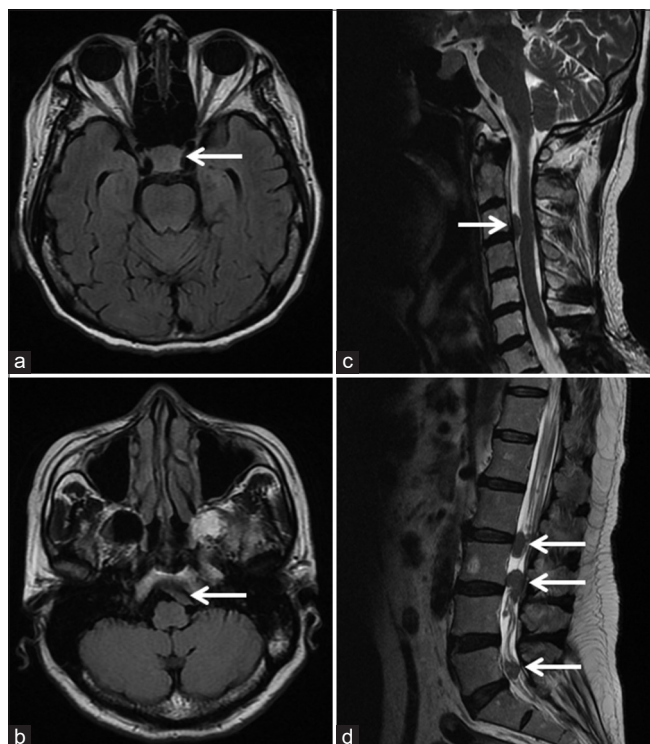


Figure 2: (a and b) Axial T2-weighted fluid-attenuated inversion recovery sequence images of the pituitary tumor and extradural lesion at the left prepontine cistern. (c and d) The T2-weighted fast-relaxation fast-spin echo sequence sagittal images of the extradural and intradural extramedullary drop metastases respectively

paraparesis of the lower limbs. The pituitary lesion is presumed to be metastatic as it is new. Biopsy of the lesion was suggested but not done due to the patient's financial constraints. 18F-FDG PET-CT is largely used to differentiate low-risk thymoma from high-risk thymoma and thymic cancer, as it is helpful in determining the surgical approach and neoadjuvant treatment.^[8,9] The incidental detection of the pituitary metastasis, in this case, highlights the sensitivity of 18F-FDG PET-CT in detecting metastatic lesions. Furthermore, early detection

of treatment failure is important as it is still unclear which chemotherapy regime works best. As metabolic changes precede anatomical changes, responders and nonresponders can be identified earlier with 18F-FDG PET-CT.^[10,11]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understand that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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