

Intracranial Involvement of Solitary Fibrous Tumor of the Thorax as Shown by Follow-up Ga-68 DOTATATE Imaging Findings

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ABSTRACT The solitary fibrous tumor is a mesenchymal soft tissue tumor and the usual first presentation site of this tumor is the pleura. There are case reports showing extrapleural involvement as well. The solitary fibrous tumors show significantly increased F-18 fluorodeoxyglucose (FDG) uptake in positron emission tomography/computed tomography (PET/CT) according to the previous case reports. A single previous case report with significant Ga-68 DOTATATE uptake has been also shown in the literature. However this is the only report of a patient with follow up Ga-68 DOTATATE PET/CT imaging findings of disseminated involvement of the disease including intracranial involvement as far as we know in the literature.

Keywords: Solitary fibrous tumor; intracranial; Ga-68; positron emission tomography

Although usual presentation of the solitary fibrous tumor is pleural region, interesting extrapleural sites have been reported previously shown by fluorodeoxyglucose (FDG) positron emission tomography/computed tomography (PET/CT) imaging including pericardial involvement.¹ FDG PET/CT findings of the pleural solitary fibrous tumors have been described clearly by previous case reports and series.² Higher FDG uptake related to malignant tumors has been determined compared to benign tumors.² Intracranial involvement of solitary fibrous tumor has been reported in the literature in a case report in 2 patients with FDG PET/CT and In-11 somatostatin receptor imaging which is a rare finding.³ These 2 cases have demonstrated completely different imaging findings which might point out the heterogeneity of the tumor biology.³ This case report

shows the Ga-68 DOTATATE imaging follow up as well as FDG PET/CT images of a case with diagnosis of solitary fibrous tumor with intracranial involvement.

CASE REPORT

A 56-years-old female patient attended to thoracic surgery department for thoracic mass lesion located in the right lateral wall. The patient's informed consent was obtained for staging by Ga-68 DOTATATE PET/CT which revealed a mass lesion of the right lateral chest wall showing significant uptake and regression after operation (Figure 1). The biopsy results showed the solitary fibrous tumor (Figure 2). Ga-68 DOTATATE imaging showed additionally significant activity accumulation in the intracranial regions as well (Figure 3). Magnetic

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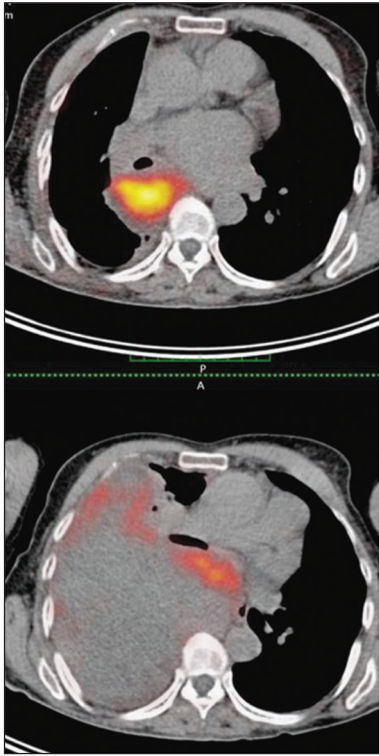


FIGURE 1: Ga-68 DOTATATE positron emission tomography/computed tomography transaxial fusion images of the patient before and after the operation (below and above) respectively.

resonance imaging confirmed the diagnosis of extrapleural involvement of solitary fibrous tumor (Figure 3). The restaging imaging was performed with Ga-68 DOTATATE imaging which revealed shrinkage of the primary pleural tumor as well as a decrease in the activity of the intracranial lesions (Figure 1, Figure 3).

DISCUSSION

Solitary fibrous tumor is usually presented in pleural involvement but extrapleural involvement might be presented as well. The intracranial involvement of the disease is presented previously. Besides morphological imaging modalities, functional imaging recently participates in the imaging algorithms. FDG PET/CT might provide prognostic information and discrimination of malignant and benign lesions as well as distant metastatic sites.⁴ The In-111 somatostatin receptor (SR) imaging uptake of this lesion is attributed to the *SSTR2* expression of the tumor and In-111 SR imaging might contribute by the selection of cases which might benefit SR related radioactive treatment modalities.^{5,6} The only case presented with Ga-68 DOTATATE imaging findings was a nasopharyngeal solitary tumor in the literature which accumulated significant activity.⁷ This is the report of single case with follow up Ga-68 DOTATATE imaging as well as intracranial involvement as far as we know in the literature.

Source of Finance

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

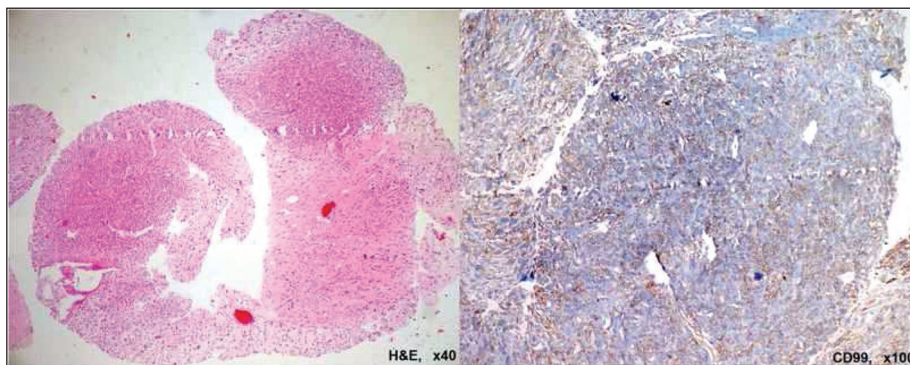


FIGURE 2: Pathology images of the resection of thoracotomy operation showing the appearance of solitary fibrous tumor.

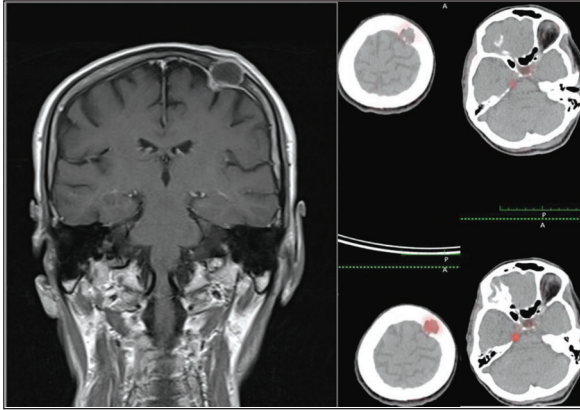


FIGURE 3: Ga-68 DOTATATE positron emission tomography/computed tomography fusion images showing the brain lesions of the patient in right temporal and left parietal region in the follow up.

Authorship Contributions

Idea/Concept: Zehra Pınar Koç, Pınar Pelin Özcan; **Design:** Zehra Pınar Koç, Pınar Pelin Özcan; **Control/Supervision:** Zehra Pınar Koç, Pınar Pelin Özcan; **Data Collection and/or Processing:** Oğuz Köksel, Rabia Bozdoğan Arpacı, Anıl Özgür; **Analysis and/or Interpretation:** Zehra Pınar Koç, Pınar Pelin Özcan, Oğuz Köksel, Rabia Bozdoğan Arpacı; **Literature Review:** Zehra Pınar Koç, Pınar Pelin Özcan; **Writing the Article:** Zehra Pınar Koç, Pınar Pelin Özcan; **Critical Review:** Oğuz Köksel, Rabia Bozdoğan Arpacı, Anıl Özgür; **References and Fundings:** Oğuz Köksel, Rabia Bozdoğan Arpacı, Anıl Özgür; **Materials:** Anıl Özgür, Rabia Bozdoğan Arpacı, Oğuz Köksel.

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