



# Extramedullary Plasmacytoma: Demonstrating the Role of $^{18}\text{F}$ -FDG PET-CT Imaging

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## Abstract

Extramedullary plasmacytoma is a rare variant of plasmacytoma that is frequently observed in the head and neck. Extramedullary plasmacytoma of the thoracic wall and duodenal bulb is quite rare. A 79-year-old man who was diagnosed as extra skeletal plasmacytoma treated with radiotherapy presented with a mass detected in right upper thoracic wall. Thoracentesis of the tumor was performed, and pathologic analysis confirmed the diagnosis of extramedullary plasmacytoma. Then the patient underwent whole-body PET/CT examination.  $^{18}\text{F}$ -FDG PET/CT showed slightly increased FDG uptake of the lesion with SUVmax 7.3.

**Keywords:** Extramedullary plasmacytoma;  $^{18}\text{F}$ -FDG, PET/CT

## Case Report

A 79-year-old gentleman initially presented with abdominal distension accompanied with nausea, vomiting of gastric contents one time and dry stool. Pathology report showed chronic inflammation of the mucous membrane of the duodenal bulb, the infiltration of the lymphocytes in the inner layer. Combined with the results of immunohistochemical staining and genetic testing, we first considered it was extra skeletal plasmacytoma. He began receiving radiotherapy in August 2016, radiation range was duodenal mass and irradiation dose was 3,060 cGy/17 F. After 17 times of radiotherapy, an additional 900 cGy/5 F were given. He stumbled on a lump of the right upper chest wall but no tenderness in June 2017. Coarse needle biopsy in the lump combined with personal medical history, we first considered it was Extramedullary Plasmacytoma (EMP). The patient underwent a Positron Emission Tomography/Computed Tomography (PET/CT) scan for the presumptive diagnosis of an extramedullary plasmacytoma. This showed mildly thickened the duodenal bulb and the descending part of the intestinal wall along with slightly increased the FDG metabolism (Figure 1). The right anterior thoracic wall was occupied and accompanied by the increase of FDG metabolism (Max SUV 7.3), and the left side of the thoracic wall and the left armpit were shown the increase of FDG metabolism (Figure 2).

## Discussion

EMP is a rare malignant disease frequently arising from the B-lymphocytes outside the bone

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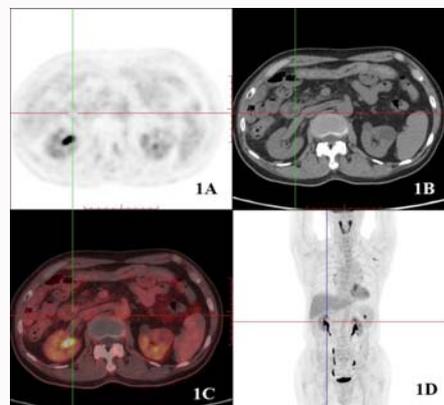
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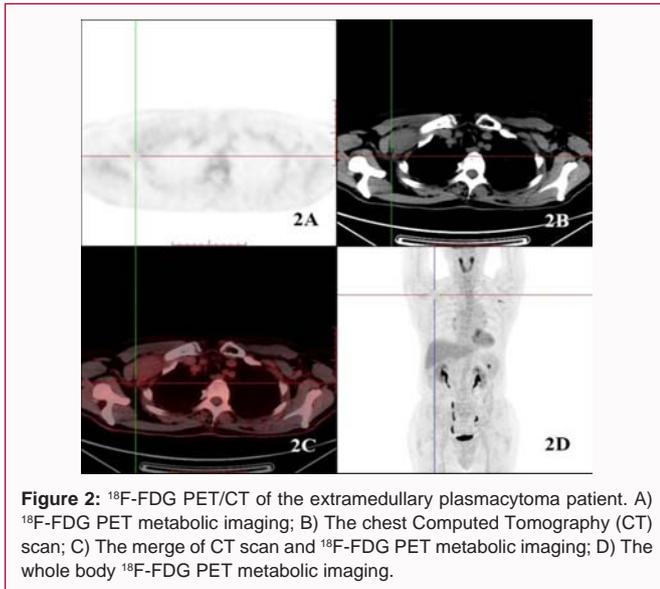
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**Figure 1:**  $^{18}\text{F}$ -FDG PET/CT of the extramedullary plasmacytoma patient. A)  $^{18}\text{F}$ -FDG PET metabolic imaging; B) The abdominal Computed Tomography (CT) scan; C) The merge of CT and  $^{18}\text{F}$ -FDG PET metabolic imaging; D) The whole body  $^{18}\text{F}$ -FDG PET metabolic imaging.



**Figure 2:**  $^{18}\text{F}$ -FDG PET/CT of the extramedullary plasmacytoma patient. A)  $^{18}\text{F}$ -FDG PET metabolic imaging; B) The chest Computed Tomography (CT) scan; C) The merge of CT scan and  $^{18}\text{F}$ -FDG PET metabolic imaging; D) The whole body  $^{18}\text{F}$ -FDG PET metabolic imaging.

marrow. The incidence of EMP is at 0.04 cases per 100,000 individuals [1]. Although EMP can arise throughout the body, almost 90% of tumors arise in the head and neck, especially in the upper respiratory tract [2]. What we found here was the EMP arisen in the thoracic wall and duodenal bulb, which was very rare. Definite diagnosis is reached only through histopathological examination coupled with immunohistochemistry. Due to its rarity and variable clinical symptoms, there are no widely established staging criteria system and treatment criteria. Surgery or radiotherapy, alone or in combination, can be used according to tumor sizes, clinical stage and willingness of the patient [3]. EMP is highly radiosensitive and nearly all patients successfully achieve local control [4]. Treatment with chemotherapy has no effects on the course of EMP and is not recommended [5]. Generally, the clinical outcome and prognosis of EMP are favorable and the overall 5-year survival rate ranges from 53% to 75% [6]. PET/CT scans have emerged as an important modality that helps confirm diagnoses and leads to definitive therapy in at least some cases [7]. Gautam et al. [8] and Zhang et al. [9] found increased the FDG metabolism in patients with extramedullary plasmacytoma [8,9], and the present patient was only with slightly increased FDG metabolism.

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