

## False Positive FDG-PET Scan Caused by Uterine Leiomyoma

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Received date: Aug 07, 2015; Accepted date: Oct 28, 2015; Published date: Oct 30, 2015

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### Abstract

Positron emission tomography with 2-deoxy-2-[fluorine-18]fluoro- D-glucose (18F-FDG-PET) has an important role in the management of lymphoma, but it is important to keep in mind that not only lymphoma but also a number of other pathologic and non-pathologic processes can cause increased tissue FDG uptake. Our case is a rare example when a uterine fibroid caused differential diagnostic problem.

**Keywords:** Lymphoma; Diffuse large B-cell lymphoma; Positron emission tomography; Uterine fibroid; Uterine leiomyoma

### Introduction

In the last 10 years positron emission tomography with 2-deoxy-2-[fluorine-18] fluoro-D-glucose (18F-FDG-PET) has emerged as a powerful imaging tool for the detection of various cancers. In high grade lymphoma it helps accurate staging as well as restaging post chemotherapy as it is able to identify nodal and extranodal sites with greater sensitivity than computer tomography (CT) alone [1]. Persistent post-chemotherapy masses are common differential diagnostic problems in lymphoma when the level of FDG avidity often provides a clue to clinical management.

### Case Report

A 45-year-old woman presented with marked B symptoms, splenomegaly and severe pancytopenia. Her bone marrow trephine biopsy confirmed heavy infiltration of diffuse large B-cell lymphoma; the staging CT scan showed no nodal involvement (stage 4, IPI 2). She went on to have rituximab-cyclophosphamide-doxorubicin-vincristin-prednisolon (R-CHOP) chemotherapy resulting in the improvement of her blood counts, the disappearance of her B symptoms and the resolution of the splenomegaly.

At the end of her planned 6 cycles of treatment the bone marrow trephine confirmed remission, and her FDG-PET showed no abnormalities in the regions previously involved, however revealed a highly active (26 × 27 × 30 mm, weight normalized SUVmax: 9.0 g/ml) nodule attached to the uterus (Figure 1, MIP image). Given that the in addition to persistent lymphoma the differential included leiomyosarcoma hysterectomy was performed. Histopathologically the tumor was highly vascularized uterine leiomyoma (Figure 2, HE, 250X). No further treatment was utilized, she is alive and well 2 years post chemotherapy.

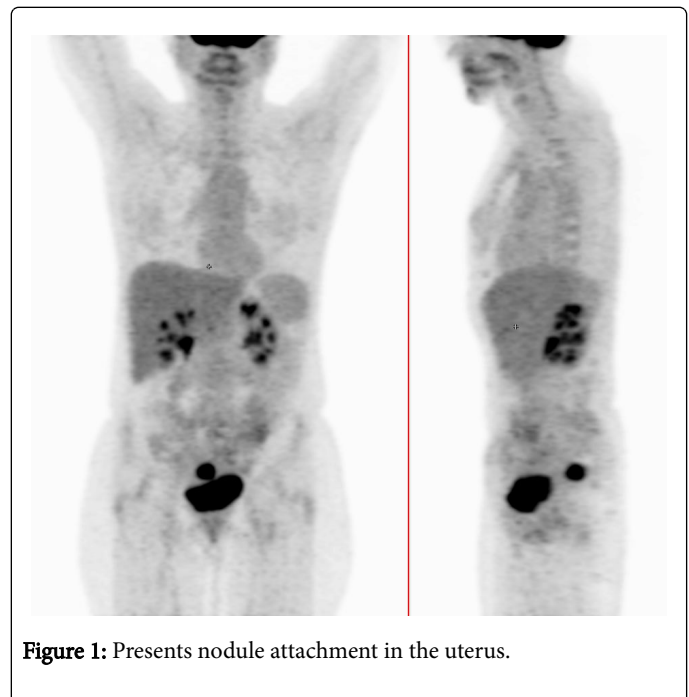


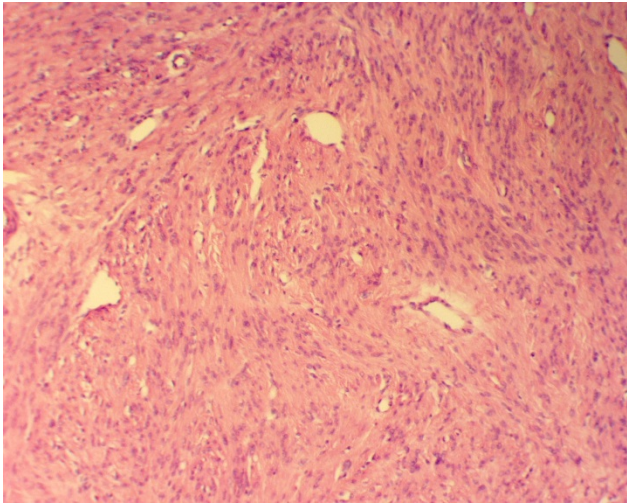
Figure 1: Presents nodule attachment in the uterus.

### Discussion

FDG-PET have radically changed the management of lymphoma. Growing evidence supports its incorporation into clinical decision algorithms, negative interim and end of treatment PET being strong predictors of good outcome in most lymphoma subtypes. As a result of its widespread use, false PET positivity became a common challenge. Examples include infection, post chemo- or radiotherapy inflammation and not uncommonly secondary tumors both benign and malignant [2-4].

Uterine fibroid, a benign tumor composed mainly of smooth muscle cells, is typically negative on PET. PET can actually be used to

differentiate leiomyomas from leiomyosarcomas [5]. Although this is a rare exception from the normal behavior of uterine fibroids our experience demonstrates that the differential for pelvic FDG avid lesions should include uterine fibroids.



**Figure 2:** Histopathological view of the vascularized leiomyoma.

### Authors' contribution

Gergely Varga and Peter Farkas treated the patient and wrote the text; Hajna Galgoczy and Peter Szabo reported the PET scans; Ferenc Toth did the US follow up and performed the surgery, Csaba Diczhazi did the histopathology. All authors have read and authorized the text.

### Conflict of interest

Authors declare that there are no competing financial interests in relation to the work described.

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