

# **Detection of Aortic Graft Infection Combined with a Pelvic Abscess Using <sup>18</sup>F-FDG PET/CT in a Patient with FUO**

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**Running title:** <sup>18</sup>F-FDG PET/CT findings in Aortic Graft Infection in patients with FUO

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**Abstract:**

Aortic graft infection (AGI) is an uncommon but severe late complication of associated with vascular surgery. Early detection is important because of high mortality. Clinical findings often are nonspecific. Some of AGI patients present with FUO. A 67-year-old female received an endovascular aneurysm repair for abdominal aortic aneurysm. After 2 years of surgery she suffered from recurrent fever for 8 months and sometimes body temperature peaked at 40° C. Laboratory examinations show all are increased. Multiple modalities of imagine has been performed including x-ray, USG and CT. To find out the cause of FUO he was referred to perform 18F-FDG PET/ CT for further evaluation. The PET/CT images revealed the extent of the inflammation around grafts and the pelvic abscess, which helped to confirm the cause of FUO and establish the diagnosis of AGI. That indicates 18F-FDG PET/CT is a reliable modality for the FUO patients who has undergone endovascular aneurysm repair.

**Keywords:** Aortic Abscess; FUO; PET/CT; FDG

## Figure Legend

Aortic graft infection (AGI) is an uncommon but severe late complication of vascular surgery associated with high mortality [1,2]. The clinical manifestation is often non-specific and easily misdiagnosed. Some of the AGI patients present with a fever of unknown origin (FUO) and need help multiple modalities for evaluation. [3-5,8] Since <sup>18</sup>F-FDG PET/CT could demonstrate the metabolic features and precise location of the inflammatory disease, especially the active inflammation, which indicates it, is a useful modality for the AGI patients with FUO. [5,6,7]

A 67-year-old female received an endovascular aneurysm repair for abdominal aortic aneurysm 2 years ago. She suffered from recurrent fever for 8 months and sometimes the body temperature peaked at 40°C. The blood parameters were increased including procalcitonin, C-reactive protein (90 mg/L) and erythrocyte sedimentation rate (29 mm/1st h). The patient performed thoracic X-rays, USG and pelvic CT, however, the source of fever was not found. Therefore, <sup>18</sup>F-FDG PET/CT was referred for further evaluation.

Intense <sup>18</sup>F-FDG uptake with a maximum standard uptake value ( $SUV_{max}$ ) of 11.2 was detected surrounding the aortoiliac grafts by PET/CT. Slight thickening of the abdominal aorta wall was found in the corresponding place on CT (solid arrows in A, B, and C). Besides, an oval soft-tissue-like mass in the presacral space, inferior to the graft bifurcation, was identified on CT images with FDG avid on corresponding PET/CT images as its  $SUV_{max}$  was 22.9 (dotted arrows in A, D, and E). Combine with the laboratory data, the patient was considered to be aortic graft infection complicated

with pelvic abscess.

Then an X-ray guided percutaneous drainage was performed, the pelvic abscess showed obvious staining during the operation (dotted arrow in F). Bacterial culture of the pus revealed the presence of *Enterococcus faecalis* infection. The symptoms improved gradually after antibiotics administration based on the drug sensitivity test.

In this patient, the PET/CT images explained the extent of the inflammation around grafts and the pelvic abscess, which helped to confirm the cause of FUO and established the diagnosis of AGI. That indicates 18F-FDG PET/CT is a reliable modality for the FUO patients who has undergone endovascular aneurysm repair.

#### References:

1. Cernohorsky P, Reijnen MM, Tielliu IF, et al. The relevance of aortic endograft prosthetic infection. *J Vasc Surg.* 2011;54(2):327-333.
2. Tayama E, Hori H, Ueda T, Kono T, et al. Usefulness of 18F-FDG-PET/CT in aortic graft infection: two cases. *J Cardiothorac Surg.* 2014 ;9:42.
3. Delarbre X, Auzary C, Bahnini A, et al. Actinomyces odontolyticus isolation during prosthetic aortic graft infection with paraprosthetic duodenal fistula. *Rev Med Interne.* 2007; 28(6):412-5.
4. Miyazaki S, Fukushima K, Sawaki D, et al. A case of graft infection 10 years after ascending aorta replacement. *Ann Vasc Surg.* 2004;18(6):755-7.
5. K. Fukuchi, Y. Ishida, M. Higashi, et al. Detection of aortic graft infection by

fluorodeoxyglucose positron emission tomography: comparison with computed tomographic findings .J Vasc Surg. 2005;5: 919–925.

6. Chacko TK, Zhuang H, Nakhoda KZ, et al. Applications of fluorodeoxyglucose positron emission tomography in the diagnosis of infection. Nucl Med Commun .2003, 24:615–624
7. Legout L, D’Elia PV, Sarraz-Bournet B, et al. Diagnosis and management of prosthetic vascular graft infections. Médecine et maladies infectieuses. 2012;42:102–109
8. Balink H, Reijnen MM .Diagnosis of abdominal aortic prosthesis infection with FDG-PET/CT. Vasc Endovascular Surg. 2007;41(5):428-32