

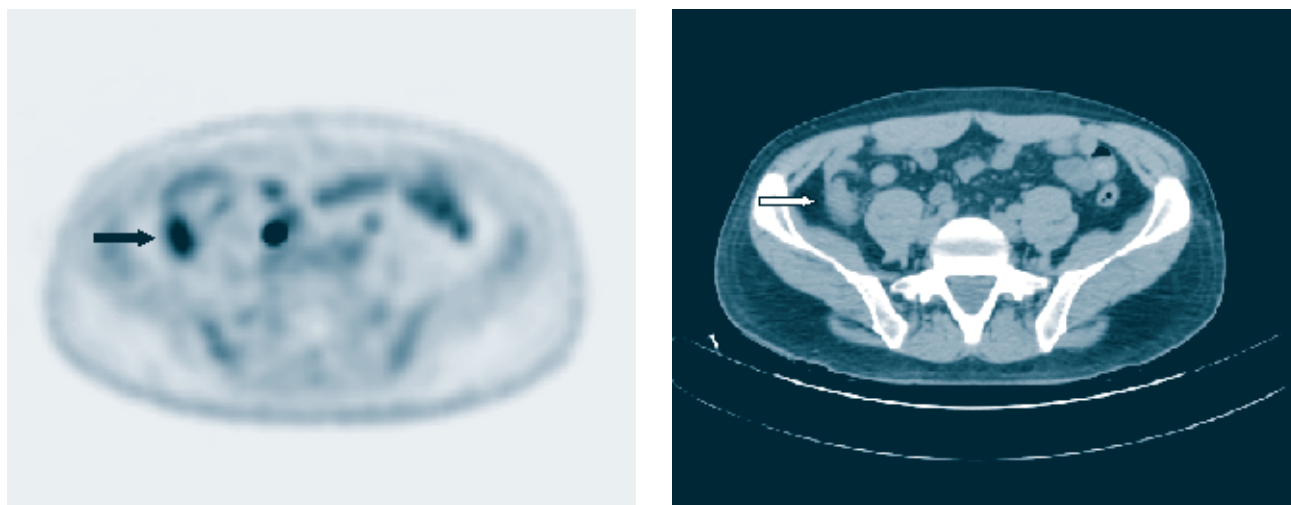
## Utility of $^{18}\text{F}$ -FDG-PET/CT imaging in the diagnosis of appendicitis

**To the Editor:** After related reports published in HJNM and other Journals [1-4] we herein report the promising role of fluorine-18-fluorodeoxyglucose positron emission tomography/computerized tomography ( $^{18}\text{F}$ -FDG-PET/CT) imaging in the diagnosis of appendicitis evident from serendipitous observation in a 38 years old male with a history of squamous cell carcinoma of the left tonsil and neck and treated with left neck dissection, radical tonsillectomy, chemotherapy and radiation, presented to us for restaging. Blood glucose prior to injection was 106mg/dl. Images were acquired from the vertex to the mid thighs 58min after injection of 555MBq of  $^{18}\text{F}$ -FDG. Axial, coronal and sagittal PET images reconstructions with and without attenuation correction were interpreted. Corresponding low dose CT images were acquired and reviewed alongside the PET images. The PET images demonstrated no abnormally increased  $^{18}\text{F}$ -FDG activity in the head or neck to indicate residual malignancy, and the low dose CT images showed postsurgical changes in the left neck. In the pelvis, a dilated and thickened blind ending tubular structure in the right lower quadrant of the abdomen was seen that corresponded to the appendix, which had avid  $^{18}\text{F}$ -FDG uptake and maximum standardized uptake value (SUVm) of 4.3. In retrospect, comparison to a prior PET/CT demonstrated that the thickening and dilation were previously present but were less marked, although avid  $^{18}\text{F}$ -FDG uptake was present in the appendix and SUVmax was 4.8. Periappendiceal fat stranding and mildly prominent regional mesenteric lymph

nodes without increased  $^{18}\text{F}$ -FDG uptake were also present on the current study. These findings were in keeping with subacute upon chronic appendicitis, which was subsequently confirmed following surgery.

Over the last several years,  $^{18}\text{F}$ -FDG-PET imaging has shown promise for the detection of inflammation due to infectious and noninfectious causes [1-5]. Imaging by  $^{18}\text{F}$ -FDG-PET has been found to be highly sensitive and specific in detecting disease activity in the terminal ileum and colon of Crohn's disease patients [5]. Scintigraphic imaging has also been used to diagnose and characterize unusual and asymptomatic cases of appendicitis [6-10]. The present case demonstrates an incidental presentation of subacute upon chronic appendicitis detected on  $^{18}\text{F}$ -FDG-PET/CT and confirmed by pathology.

Functional imaging can potentially be helpful for early diagnosis or exclusion of infection and inflammation that is of utmost importance for the optimal management of patients with such common and treatable disorders [1-3]. Multiple cytokines and growth factors have been proposed to be responsible for the increased  $^{18}\text{F}$ -FDG uptake by the inflammatory cells in both the in vitro and in vivo models [1, 2]. In contrast to the other nuclear medicine modalities, such as gallium-67 scintigraphy and labeled leukocyte imaging,  $^{18}\text{F}$ -FDG-PET/CT has high resolution and can distinguish soft tissue infection from that in other tissues e.g. osteomyelitis and hence, increasingly is being used for detecting infection/inflammation in soft tissues [1-3].



**Figure 1 (A and B).** Fluorine-18-fluorodeoxyglucose positron emission tomography/computed tomography ( $^{18}\text{F}$ -FDG-PET/CT) scan in our patient with squamous cell carcinoma following surgical, chemotherapy and radiation treatment was performed for restaging. This scan incidentally showed avid  $^{18}\text{F}$ -FDG uptake in a thickened dilated appendix and increased periappendiceal fat stranding. Findings were highly suspicious for sub-acute upon chronic appendicitis, which was confirmed by laparoscopic appendectomy.

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