SHORT COMMUNICATION

RETROPERITONEAL FIBROSIS ON FDG PET/CT IMAGING

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Retroperitoneal Fibrosis on FDG PET/CT Imaging

60-year-old male having chronic liver disease (Hepatitis-C Virus) presented with history of low grade fever and lumbago. Due to raised serum creatinine, FDG PET/CT (low dose non-enhanced) was performed. Images revealed hypermetabolic soft tissue thickening in left para-aortic region at renal level encasing abdominal aorta without involvement of right ureter and inferior vena cava.

A CT guided biopsy was done and histopathology revealed retroperitoneal fibrosis (RPF) without evidence of malignancy (Idiopathic Retroperitoneal Fibrosis).

Retroperitoneal fibrosis (RPF) is a fibro-inflammatory reaction around the abdominal aorta and iliac arteries extending into retroperitoneum and involvement of ureters.[1] RPF is relatively a rare condition having a reported incidence of 1.38 cases per 100,000 people[2] with predilection for adult (>60 years) and male (M; F = 3:1).[3]

Common symptoms associated with RPF are low grade fever, malaise and dull flank pain due to an ongoing inflammatory process and sometimes renal colic due to entrapment of ureter. In 2/3rd cases it is idiopathic in origin (Ormond disease) and in remaining could be due to radiation, medication (hydralazine, beta blocker, ergotamine, methyldopa), immune mediated (IgG4 related disease), occupational (exposure to asbestos), retroperitoneal bleed or malignancy.

Contrast enhanced CT (CECT) is the imaging of choice for delineation of extent of retroperitoneal fibrosis, encasement and obstruction of ureters and vascular structures. Classically, it develops around aortic bifurcation and spreads upwards where it can envelop the renal hila. It encases but does not invade or stenose ureters or vessels. However, ureteric obstruction and venous thromboses may occur. Presence of subcentimeter regional nodes are not uncommon in idiopathic RPF while displacement of aorta and/or IVC from underlying vertebrae are suggestive of neoplastic process.[4] Similarly, bony erosion also suggests malignancy or infection. Importantly, RPF in early or active stages shows variable enhancement after IV contrast which is usually abolished in non-active phase of disease.

MRI has sensitivity comparable to CT with better soft tissue contrast. Active RPF is hypointense on T1W but hyperintense on T2W while in non-active phase both sequences are hypointense. In patient with impaired renal function, urinary tract can be evaluated without gadolinium using T2W-spine Echo.

Whole body PET/CT Imaging using FDG (good substrate for neoplastic and inflammation) plays an important role in diagnosis (idiopathic or neoplastic based on metabolic mapping), biological activity of disease (related to intensity of FDG uptake; SUVmax) and most importantly in response evaluation to treatment (change in SUVmax).[4] In patients with RPF induced ureteric stricture, PET is a promising tool for surveillance of disease activity and for planning removal of ureteral stents.[1]

Conflict of Interest: None

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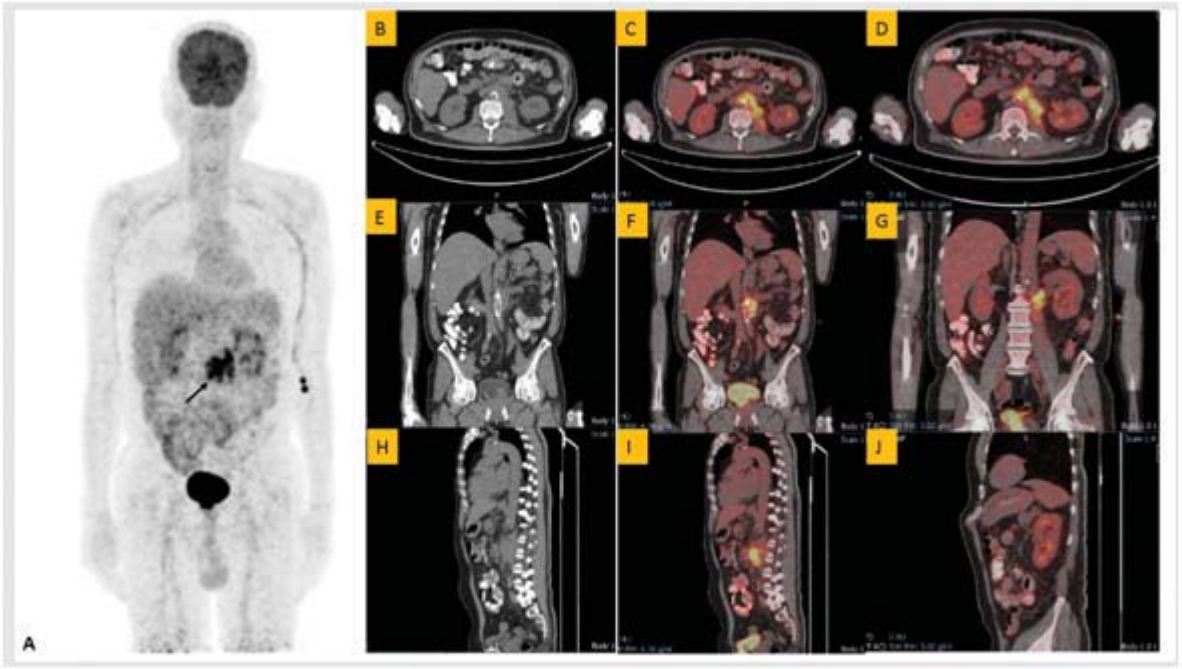

Figure 1: FDG PET/CT non-contrast enhanced Study. **A:** Maximum Intensity Projection [MIP] image shows enhanced FDG uptake (black arrow) in left paraaortic region. **B,C,D** (Axial), **E,F,G** (Coronal) and **H,I,J** (Sagittal): CT, fused images at lower and renal hilum level respectively) showing hypermetabolic soft tissue thickening in left paravertebral area extending anteriorly to encase abdominal aorta without involvement of right ureter (absence of right hydronephrosis) or inferior vena cava.

References

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