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FDG PET/CT in Fever of Unknown Origin (FUO)

-by Dr. Nusrat Shaikh

Fever of unknown origin (FUO) means absence of an identifiable cause of fever, despite reasonable investigations in either the inpatient or outpatient setting and the persistence of fever for a sufficient time to rule out self-limiting fevers.

FUO can be classified as:

- 1 Classical including infections (most common cause TB) (Fig 1), cancers (2-25% FUO cases), auto-inflammatory (Fig. 2) or auto-immune conditions (5-32% FUO cases) and miscellaneous causes (Fig. 3).
- 2 Nosocomial (hospitalized patients) vascular catheter associated, urinary tract infections, pneumonias etc.
- 3 Immunodeficiency related HIV, organ transplant recipients, hematologic cancers patients receiving chemotherapy and bone marrow transplant, immunosuppressive therapies.
- 4 Travel associated cases

FDG PET/CT should be advised when basic and specific testing based on history, examination, epidemiology, exposure, laboratory and imaging evaluation have not revealed any diagnosis. FDG PET/CT for FUO has a high sensitivity (86-98%) and a diagnostic yield of more than 50%. A negative FDG PET/CT result is associated with a high likelihood of spontaneous remission of fever.



Fig. 1 (A-C): 53-years old woman presented with FUO and weakness. MIP (A) shows focal FDG uptake in left supraclavicular and right axillary regions. Axial fused PET/CT images (B) and (C) show metabolically active enlarged left supraclavicular (arrow in B) and right axillary (arrow in C) lymph nodes. The biopsy of the right axillary lymph node revealed mycobacterium tuberculosis.



At a glance:

- Every attempt should be made to establish the diagnosis of fever before empirical antimicrobial or anti-inflammatory therapy.
- FDG PET/CT has a high sensitivity in identifying the cause of fever.
- Even a negative FDG PET/CT in FUO suggests a high likelihood of spontaneous regression of fever.



Fig. 2 (A-D): 61-years old woman who presented with FUO. MIP (A) shows diffuse increased metabolic activity along the aorta and bilateral subclavian and femoral arteries. Axial fused PET/CT images show metabolic activity with circumferential wall thickening in the aorta (B), both subclavian (C) and both femoral arteries (D), consistent with large vessel vasculitis.



Fig. 3 (A-C): 42-years old man presented with FUO. Axial CT images (A, B) show subfissural (arrow in A) and lung (arrow in B) nodules. Coronal fused PET/CT image (C) shows metabolically active enlarged mediastinal and hilar lymph nodes (arrows). EBUS guided biopsy confirmed sarcoidosis.

References:

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