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Utility of Fluorodeoxyglucose-Positron Emission Tomography (FDG-PET) Scan in the Diagnosis of Inflammatory Causes of Fever of Unknown Origin – A Short Communication

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ABSTRACT

Fever of unknown origin (FUO) is a major diagnostic challenge worldwide. Causes of FUO range from infectious diseases to malignancies and sometimes inflammatory disorders. There have been major advances made in various diagnostic fields which help in diagnosis of FUO. FDG-PET (Fluorodeoxyglucose Positron emission tomography) scans are being found helpful in diagnosing many rare causes of FUO. Here we present a rare case of FUO in which we could arrive at the diagnosis after the PET scan which showed Aorto-arteritis. Hence we concluded that PET scans may be used in diagnosing non-infectious and inflammatory causes of FUO where the preliminary investigations could not help in the diagnosis.

Keywords: FDG-PET scans –Fluoro-deoxyglucose positron emission tomography, Aorto-arteritis, FUO- Fever of unknown origin

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INTRODUCTION

Fever of unknown origin (FUO) is a common cause of outpatient visits and admissions in hospitals all over the world. Diagnosing cause of FUO is a major challenge despite major advances made in various fields of diagnostics. . FDG-PET scan has been used to diagnose FUO when the preliminary investigations fail to diagnose the cause of FUO. Here we report a rare case of FUO in which we could diagnose the cause with the help of FDG-PET scan.

CASE REPORT

A 58 year old lady presented with low grade fever & night sweats since 3 months. There was no history of cough, headache, abdominal pain, joint pain, burning urination. She was not a diabetic. There was no history of tuberculosis in the past. On clinical examination patient had pulse rate of 102/min, blood pressure of 126/80 mmHg in both upper limbs and 140/88mm Hg in both lower limbs. All peripheral pulses were palpable. There was mild pallor.Systemic examination was within normal limits. Laboratory investigations as per the standard algorithm of FUO Hemoglobin : 10 gm%,Total leukocyte count: 9690 cells/mm^3(Neutrophils-77%, Lymphocytes 18%, Eosinophils-1%, Monocytes 4%). Peripheral smear was showing normocytic normochromic anaemia. .Erythrocyte sedimentation rate was 102mm/hr. Her blood and urine cultures showed no growth, sputum for Acid fast bacilli was negative .Chest X-Ray was normal. Ultrasonography of abdomen and pelvis was normal. Urine for AFB culture was negative. HIV/HbsAg/Anti- HCV were negative. Serum ferritin, Anti-nuclear antibodies, c-ANCA, p-ANCA were negative .CT scan of thorax was normal .Patient was advised bone marrow study, but patient was not willing for the same. Her temporal artery Doppler was also normal. Mantaux test was found positive. In view of strong mantaux positive result and patient being from endemic zone of tuberculosis patient was started on empirical Anti-tubercular treatment. There was no relief of symptoms and the treatment was stopped after 1 month. FDG-PET/CT was done which showed features of long segment wall thickening with significant metabolic activity involving the aorta with thickening extending to bilateral subclavian arteries & proximal common carotid arteries, consistent with Aorto-Arteritis (Figure 1). Patient was started on therapy with methotrexate 15 mg /week and leflunomide 10 mg /day. On follow up patient did not have any fever.

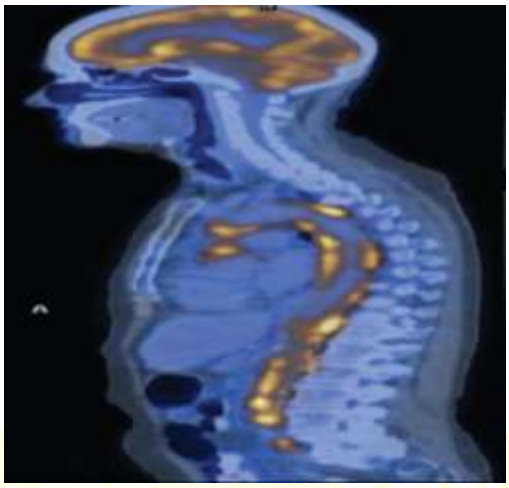

Figure 1: Aorto-Arteritis

DISCUSSION

Aorto-arteritis is an inflammatory disease of the aorta which may be caused by large vessel vasculitides like Takayasu's arteritis, Giant cell arteritis, rheumatic and HLA-B27 associated spondyloarthritis, ANCA associated vasculitis, Behcet's syndrome, Infections such as Syphilis, tuberculosis, Salmonella and sometimes idiopathic aortitis. Aortitis has been one of the rare causes of FUO [(1).] Aorto-arteritis can be diagnosed by FDG-PET scans even at early stages. Even other non-infectious inflammatory causes of FUO like Still's disease , Sarcoidosis and Amyloidosis can also be diagnosed using PET scan.[(1)] FDG-PET scan has high resolution and greater sensitivity in chronic low-grade inflammation and in diagnosis of vasculitis.

In a study conducted by Nidhi singh et al showed that utility of PET scan in contributing to the diagnosis of FUO was 38%. They also suggested that the cause of FUO was non infectious inflammatory disease in around 20% of cases which can be detected using PET scan.[2] In a study conducted by Buysschaert I et al in Belgium stated that PET scan was helpful in diagnosing 53% cases of FUO[3] Aortitis can be diagnosed by PET scan and the results are comparable with MRI scans.[4] Hence PET scans can be considered in the diagnosis of PUO especially when non-infectious and inflammatory conditions are considered. PET scan may also be useful in the early diagnosis of such disorders.

CONCLUSION

Hereby we conclude that FDG-PET scan is a useful modality of investigation for the diagnosis of FUO when non-infectious and inflammatory disorders are suspected.

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