

# 18F-FDG PET/CT in Staging and Response Evaluation of Rare Case of Non-Hodgkin's Lymphoma Involving Pericardium, Kidney and Pancreas

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**Abstract:** 18F-FDG PET/CT is increasingly applied in staging and response to treatment assessment of lymphomas. Multiple isolated cases with extranodal involvement of Non hodgkins Lymphoma (NHL), detected on 18F-FDG PET/CT, have been previously reported. Here, we report a rare case of extranodal NHL involving multiple sites namely pericardium, kidney, pancreas in addition to mediastinal lymph nodes which were detected on 18F- FDG PET/CT. In the present case, involvement was accurately demonstrated, and early complete remission was documented using baseline and follow-up FDG PET/CT.

**Keywords:** Non Hodgkin lymphoma, Pericardium, Pancreas, 18F- FDG PET/CT.

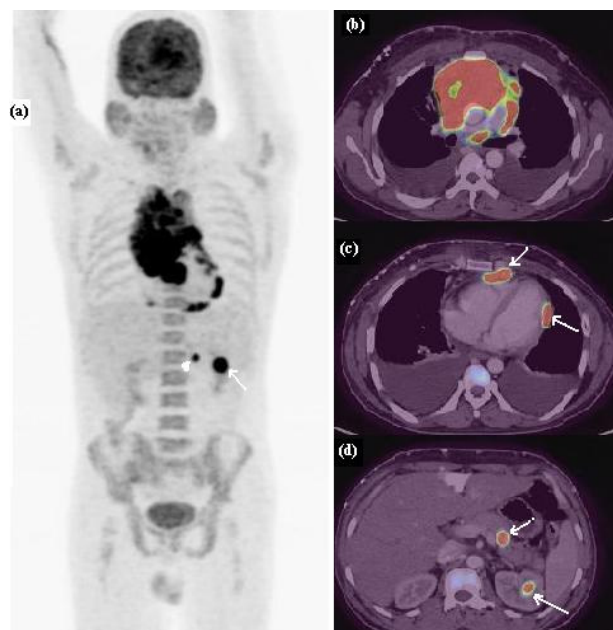
## INTRODUCTION

Diffuse large B cell Lymphoma (DLBCL) is the most common type of Non hodgkins Lymphoma (NHL) constituting 33% of all cases. The patient can present either with a primary disease of lymph nodes or that of extranodal sites. More than half of the patients have some site of extranodal involvement at the time of initial diagnosis. Any organ can be involved, with the most common sites being the gastrointestinal tract and bone marrow, each being involved in 15-20 % of the patients [1]. pericardium, pancreas and renal involvement is quite uncommon in DLBCL [2]. Uncovering such rare sites in one single patient highlights the role of whole body 18F Fluorodeoxyglucose(FDG) Positron Emission Tomography/Computed Tomography (18F-FDG PET/CT) in staging of lymphomas. Also, it serves as a baseline, which can be compared to the post-treatment study for assessing response, as in this case, wherein a post-treatment PET/CT study shows complete metabolic response to treatment.

## CASE REPORT

A 55-years old man, presented with history of unexplained fever, weight loss and Chest discomfort .X ray chest revealed anterior mediastinal mass lesion. A biopsy from the mediastinal mass confirmed it to be NHL B cell type. Patient was then referred for a baseline whole body 18F-FDG PET/CT study.

Maximum intensity projection (MIP) images (Figure 1a) revealed multiple foci of increased tracer uptake in mediastinal and abdominal regions. In addition, there were two foci of intense uptake on the left side of abdomen. Axial fused PET/CT images revealed uptake to anterior mediastinal mass (Figure 1b), pericardium (Figure 1c), body of pancreas and left kidney (Figure 1d). Patient received four cycles of intravenous bolus



**Figure 1:** Whole body fluorodeoxyglucose-positron emission tomography/computed tomography (PET/CT) maximum intensity projection image (a) showing abnormal tracer foci in mediastinum and two foci in abdomen on left side (arrow and arrowhead), Axial fused PET/CT showed a intense uptake in the anterior mediastinal lesion (b), pericardium lesions (arrow) (c), pancreas and left kidney lesions (arrows)(d).

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chemotherapy regimen, R-CHOP (Rituximab with cyclophosphamide, doxorubicin, vincristine and prednisone) after which he was referred for a FDG PET/CT study for treatment response assessment. Post-treatment FDG PET/CT study revealed no abnormal focus of FDG uptake in the entire body, suggestive of complete metabolic and morphological response to treatment in pericardium, pancreas and left kidney (Figure 2).



**Figure 2:** Post treatment Whole body fluorodeoxyglucose-positron emission tomography/computed tomography (PET/CT) maximum intensity projection image showing no abnormal uptake suggesting complete metabolic response to therapy.

## DISCUSSION

DLBCL can involve various extranodal sites such as the gastrointestinal tract, bone, brain, testis, ovary, lung, nasopharynx, soft tissue, thyroid, kidney, liver, breast, skin, etc [3]. Heart and pericardium are rarely involved in DLBCL. The involvement is usually revealed by cardiac complications and is associated with a poor prognosis. Julian *et al.* reported two cases of DLBCL with cardiac involvement (apical septum,

right ventricle and right auricle) detected by 18F-FDG that allowed an early diagnosis and chemotherapy, therefore, improving the survival [4]. Few cases of cardiac involvement in DLBCL have been reported, both primary and metastatic, detected by 18F-FDG [5, 6]. In our case multiple separate nodular lesions were detected in pericardium.

Renal involvement in most of the cases it is secondary and occurs by hematogenous spread or by direct extension of the disease from a retroperitoneal mass [7]. As FDG is excreted by the kidneys, it can lead to false positive and false negative interpretations on 18F-FDG. Renal involvement in NHL is seen as multiple focal areas of increased FDG uptake mostly in renal cortices that may be unilateral or less commonly, bilateral. There may or may not be corresponding lesions in non diagnostic CT scans [8]. In the present case, single focal area of increased radiotracer uptake was noted in left renal cortex. This lesion was isodense and non-enhancing on Contrast Enhanced CT. Pancreatic involvement may be diffuse (resembling pancreatitis) in the form of focal masses or as secondary involvement from adjacent lymph nodes. Secondary pancreatic involvement has been reported in only 0.2-2% of patients with NHL [9, 10].

Therefore, whole body imaging with a sensitive modality such as 18F-FDG is mandatory to assess the extent of disease by detecting unexpected extranodal sites of disease or exclusion of disease in the presence of nonspecific extranodal CT findings [11]. In patients with known disease, other goals can be accomplished, which are evaluation of response to therapy (complete response was demonstrated in the present case), identification of new or recurrent disease, and monitoring the complications of therapy. In patients, where the disease has not been confirmed, imaging helps in reaching a provisional diagnosis. In conclusion, the present case highlights the utility of 18F-FDG in detection of extranodal NHL at unsuspected sites which may have an important bearing on the management and prognosis.

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