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Case Report

INCIDENTAL DETECTION OF RETROPERITONEAL FIBROSIS ON F-18 FDG PET-CT

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ABSTRACT
Retroperitoneal fibrosis (RPF) is an unusual condition characterized by the occurrence of inflammation and fibrosis in the retroperitoneal space. Radiologic imaging methods such as computerized tomography, ultrasound, magnetic resonance imaging and arteriography decrease the probability of misdiagnosis of vascular pathologies. However, misdiagnosis may occur. An abdominal aortic aneurysm (AAA) is a swelling or bulge in the aorta, the main blood vessel that runs from the heart down through the chest and abdomen. Fibromatosis surrounding the aorta is one of the important pathologies that should be incorporated in the differential diagnosis of AAA cases. Retroperitoneal fibromatosis can mimick abdominal aorta aneurysm in localization. However, the symptoms, abdominal CT and ultrasonographic appearance may lead to differentiate between RPF and AAA. Herein, we report a 66 yr old man who had come with history of carcinoma left pyriform fossa with lung nodules for PET-CT scan & which led to probable diagnosis of retroperitoneal fibrosis. It has been observed that Abdominal MRI and/or CT before surgical procedure can provide important clues to exclude retroperitoneal fibrosis. In our study due to ill health of patient& financial constraints, no further diagnostic treatment could be done for the same. Our diagnosis is retroperitoneal fibrosis considering the PET-CT imaging findings.

Keywords: *Retroperitoneal Fibrosis, Abdominal Aortic Aneurysm, Fibromatosis, PET-CT, MRI*

INTRODUCTION
Retroperitoneal fibrosis is a rare fibro-inflammatory disorder in which abdominal formation of fiber like (fibrosis) occurs behind the membrane that lines the cavity of the abdomen (peritoneum). Retroperitoneal fibrosis is a slowly progressive disorder which can involve ureter and other abdominal organs or vessels, so they become blocked by a fibrous mass. It is two to three times more common in men compared to women & most patients present between 50 to 60 years of age (loffeld *et al.,* 1993; Tasdemir *et al.,* 2013). RPF encompasses the idiopathic form (>75% of the cases) and secondary forms, which include cases secondary to malignancies, infections, drugs, radiotherapy, or other conditions (Vaglio *et al.,* 2016). Retroperitoneal fibrosis may be confused with mesenteric fibromatosis (Tasdemir *et al.,* 2013). Intra-abdominal or mesenteric fibromatosis desmoid tumour is a uncommon proliferative disease affecting the mesentery. It is a locally aggressive tumour that lacks metastatic potential, but the local recurrence is common (Wronski *et al.,* 2011). Retroperitoneal fibromatosis can imitate abdominal aorta aneurysm in localization& symptoms. Abdominal aorta aneurysm (AAA) is a localized enlargement of the abdominal aorta such that the diameter is more than 50% larger than normal or greater than 3 cm. AAAs are vascular pathologies that commonly develop in higher age group due to atherosclerosis. Diagnosis of RPF can be established with CT or MRI, associated with clinical findings. CECT & histopathology reports are effective in differentiating retroperitoneal fibrosis & abdominal aorta aneurysm.
Herein, we report a 66y old man who had history of carcinoma left pyriform fossa with suspicion of lung metastases. He was referred for 18F-FDG PET-CT scan & which led to diagnosis of retroperitoneal fibrosis.

CASE

A 66 yr old man with the history of carcinoma left pyriform fossa & suspicious lung metastasis referred for whole body 18F-FDG PET-CT scan. PET-CT scan revealed FDG avid primary lesion in left pyriform fossa & posterior pharyngeal wall. A lymph nodal mass lesion with heterogeneous FDG uptake was also noted at the left level of II-V cervical region. FDG avid prevertebral, left parotid & mediastinal lymph nodes were noted. Multiple pleural & parenchymal based nodular lesions of varying sizes were noted in bilateral lungs. Focal FDG uptake was also noted in sternum, D5 vertebra& right femur. Also interestingly PET-CT scan revealed a non FDG avid hypo dense fibrotic tissue around the abdominal aorta to the upper part of bilateral common iliac artery which is comprehensibly noticeable [Figure1, 2 & 3].

Figure 1: Hypodense fibrotic tissue around the abdominal aorta to the upper part of bilateral common iliac artery in sagittal section

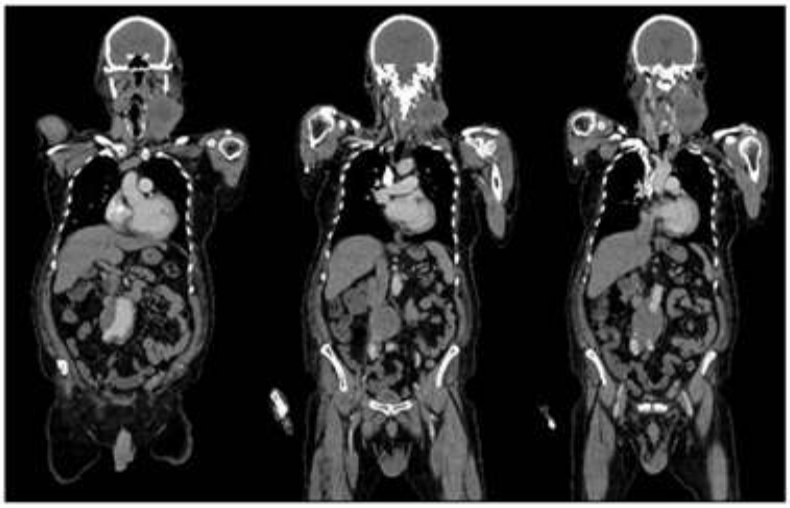

Figure 2: Hypodense fibrotic tissue around the abdominal aorta to the upper part of bilateral common iliac artery in coronal section

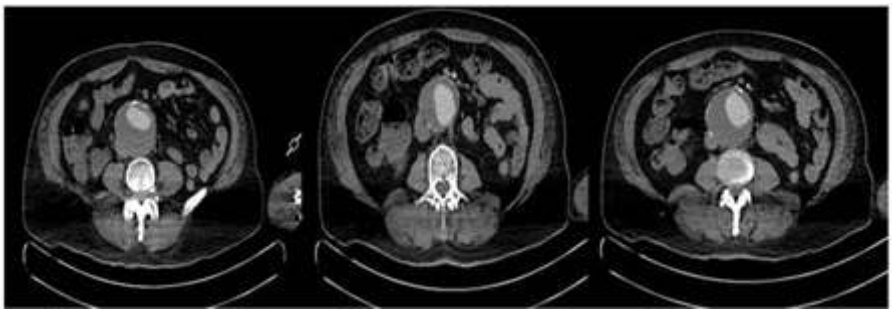

Figure 3: Hypodense fibrotic tissue around the abdominal aorta in transverse section

The above observation led to the suspicion of retroperitoneal fibrosis. On the basis of above suspicion, the patient was enquired for history of intense abdominal pain with bleeding or hemorrhage, difficulty in urination, renovascular hypertension, deep vein thrombosis, discoloration in one or both legs or leg swelling etc. The patient had informed that he had off an abdomen pain & leg swelling.

DISCUSSION

Retroperitoneal fibrosis (RPF) is a rare condition characterized by the presence of inflammation and fibrosis in the retroperitoneal space (Gilkeson *et al.*, 1996). The disease process characteristically begins with clinical symptoms of flank pain and unexplained weight loss. Anatomically, fibrosis and inflammation starts surrounding the large artery, usually the aorta and progresses inferiorly toward the arteries that carry blood to legs, outwards towards the kidneys and nearby structures, ultimately leading to kidney failure. Approximately 5–25 percentage of abdominal aorta aneurysms are associated with perianeurysmal fibrosis, which likely represents an early or mild form of retroperitoneal fibrosis.

Radiologic imaging methods such as CT scan, ultrasound, MRI, and arteriography decrease the probability of misdiagnosis of vascular pathologies. The retro peritoneum can host a broad spectrum of pathologies, including a variety of uncommon benign tumours and malignant neoplasms that can be either metastatic or primary lesions. Retroperitoneal tumours can consequence a diagnostic dilemma and present various therapeutic challenges because of their rarity, relatively late presentation and anatomical location, often in near relationship with several important structures in the retroperitoneal space. Retroperitoneal fibromatosis can imitate abdominal aorta aneurysm in localization and symptoms wherein ultrasonographic appearance along with abdominal CT may lead to differentiate RPF from AAA. There are some indications which help to differentiate between fibromatosis (Mesenteric, Retroperitoneal and Pelvic) and Retroperitoneal Fibrosis [Table-1] (Stanford Medicine Surgical Pathology Criteria).

Table 1: Comparative chart of Fibromatosis and Retroperitoneal Fibrosis

Fibromatosis, Mesenteric, Retroperitoneal and Pelvic	**Retroperitoneal Fibrosis**
Scant inflammation	Prominent inflammatory component
Forms a mass	Diffuse, usually no mass lesion
Rarely involves both ureters	Medial deviation of both ureters
Stroma diffusely collagenous	Broad bands of hyalinized collagen

Abdominal aorta aneurysms (AAAs) are vascular pathologies that mostly occur in advanced-age group due to atherosclerosis. AAAs have been found to be male predominant. But after menopause, female/male ratio becomes equal. After they reach a certain diameter aneurysms become symptomatic. The diagnosis has been established radiologically. Until changes of vascular or ureteric compromise are noted, retroperitoneal fibrosis usually goes unnoticed. In our case, the symptoms of the patient go more in favour of retroperitoneal fibrosis. When symptomatic retroperitoneal fibrosis has been associated with abdominal aortic aneurysm, ureteral involvement has uniformly been present. Cases demonstrating new ultrasonographic picture can aid in early identification of retroperitoneal fibrosis before complications (Henry *et al.*, 1978). In patients with abdominal aortic aneurysms, routine ultrasonography may identify unsuspected retroperitoneal fibrosis, a factor that may be important in preoperative planning for safe surgical intervention. In our case we could not confirm whether it is a case of RPF or AAA due to the lack of histopathological examination evidence; however, our finding is very likely to be RPF based on imaging. However, we suspect that on surgery, retroperitoneal fibrosis surrounding the aorta would be detected, as suspected on PET-CT scan as depicted [Figure 4].

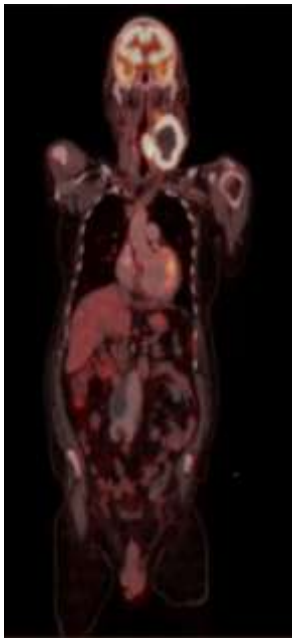

Figure 4: Fused image showing retroperitoneal fibrosis surrounding the aorta.

RPF can be seen depending upon localization of intestinal obstruction, gastrointestinal bleeding, abdominal pain, or fever unknown origin. Symptomatic patients present with vague, including dull, nonspecific abdominal symptoms, poorly localized back or flank pain.

CONCLUSION

Based on this case report of a 66 yr old man who had come with history of carcinoma left pyriform fossa with lung nodules for PET-CT scan, it has been observed that abdominal MRI and/or CT before surgical procedure can provide important clues to exclude retroperitoneal fibrosis. In our study due to ill health of patient & financial constraints, no further diagnostic treatment (abdominal CT scan, MRI scan) could be done for the same. Our diagnosis is retroperitoneal fibrosis considering the PET-CT imaging findings.

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