



Radio-Diagnosis

A CASE REPORT ON RETROPERITONEAL ASPERGILLOMA.

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ABSTRACT We report imaging findings in a 40-year-old, diabetic male patient who presented with shortness of breath, left hypochondriac mass and mild pleural effusion on examination. He had a history of extrapulmonary TB (Pleural TB) two years ago for which he was treated. Now Sputum culture tested negative for tuberculosis and on pleural tap, pleural fluid tested negative for Mycobacterium on CBNAAT. Pleural fluid is negative for fungal hyphae on fungal stains. CT scan showed a large non-enhancing soft tissue mass in the retroperitoneum. The lesion is hypointense on T2W and T1W sequences on MRI. The lesion was biopsied and the histology showed granulomatous inflammation with necrosis and numerous fungal hyphae with foci of angioinvasion. ZN stain does not show acid-fast bacilli. There was no evidence of malignant cells. On Fungal culture, Aspergillus fumigatus growth was seen and a final diagnosis of retroperitoneal aspergilloma was made. To the best of our knowledge, the present case of a retroperitoneal aspergilloma with no surgical history is only the third report in the literature.

KEYWORDS : Retroperitoneum, aspergilloma, Abdomen radiology.

CASE DETAILS:

A 40 yr old, diabetic male patient presented with shortness of breath, left hypochondriac mass and mild pleural effusion on examination, with a past history of extrapulmonary Tuberculosis (Pleural) for which he was treated with ATT (6 months) and Video-assisted thoracoscopic decortication two years ago. Now sputum culture tested negative for tuberculosis. On pleural tap, pleural fluid tested negative for Mycobacterium on CBNAAT. Pleural fluid is negative for fungal hyphae on fungal stains. Laboratory evaluation demonstrated an elevated white blood cell count of $16.3 \times 10^3/\mu\text{L}$, hemoglobin of 13.0 g/dl, and a platelet count of $166 \times 10^3/\mu\text{L}$. The electrolyte panel, and liver and kidney function tests were unremarkable. The viral panel, including Cytomegalovirus, Epstein-Barr virus, Herpes simplex virus, Human Immunodeficiency Virus, and hepatitis were all negative for an acute infection. The blood, stool, and urine cultures showed no growth.

IMAGING FINDINGS:-

CECT abdomen showed a large ill-defined non-enhancing soft tissue density lesion in the retroperitoneum involving the left perirenal and posterior pararenal space displacing the left kidney, renal vessels, and pancreatic tail anteromedially (Figures 1a and 1b). Superiorly the lesion is displacing the spleen anteriorly and cranially. The mass is seen extending upto abdominal wall postero-laterally and into the pelvis more inferiorly, causing anterior displacement of the small bowel. Medially it is compressing the ipsilateral psoas muscle. (Figure 2)

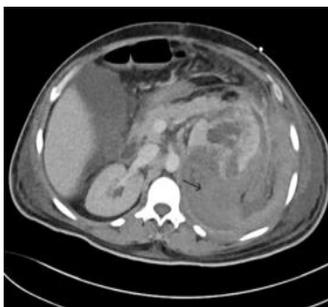


Figure 1a: CECT abdomen axial image of a 40-year-old male, showing a large ill-defined non-enhancing soft tissue density retroperitoneal lesion (marked with arrows) involving the left perirenal and posterior pararenal space displacing the left kidney, renal vessels, and pancreatic tail anteromedially.



Figure 1b: CECT abdomen axial image of a 40-year-old male, showing a large ill-defined non-enhancing soft tissue density retroperitoneal lesion (marked with arrows)



Figure 2: CECT abdomen coronal image of a 40-year-old male showing a retroperitoneal non-enhancing lesion (marked with arrows) displacing the spleen anteriorly and cranially. The mass extended laterally to the abdominal wall and inferiorly into the pelvis. Medially it is compressing the ipsilateral psoas muscle.

On MRI, the lesion is, predominantly hypointense on T2W (Figure 3) and T1W sequences (Figure 4) and there was no signal loss on STIR sequences (Figure 5).

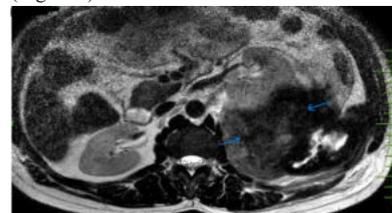


Figure 3: MRI T2W axial abdomen image of a 40-year-old male showing, a large ill-defined hypointense retroperitoneal mass lesion (marked with arrows) involving the left perirenal and posterior pararenal space displacing the left kidney, renal vessels, and pancreatic tail anteromedially.

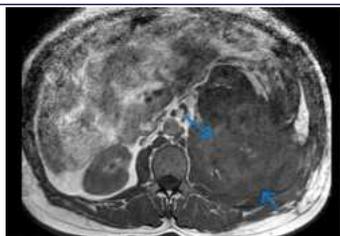


Figure 4: MRI T1W axial abdomen image of a 40-year-old male, showing predominantly hypointense retroperitoneal mass lesion (marked with arrows)

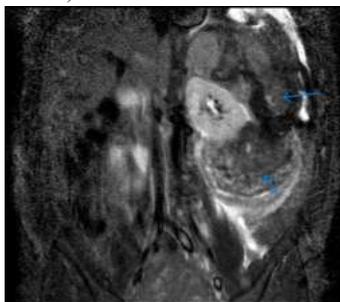


Figure 5: MRI STIR coronal abdominal image of a 40-year-old male, showing retroperitoneal mass lesion (marked with arrows) with no evidence of signal loss.

There was no diffusion restriction on the DWI sequence. Imaging differentials were solid retroperitoneal lesions, and granulomatous /fungal infections were considered. Lipoma and liposarcoma were ruled out as there was no signal loss on STIR sequences. Lymphomas can be hypointense on T2W imaging but show vivid contrast enhancement and restricted diffusion on DWI. Low signal intensity on T1W and T2W imaging can be due to fibrous components as in undifferentiated pleomorphic sarcoma (previously malignant fibrous histiocytoma) and in inflammatory myofibroblastic tumors. Both these lesions show heterogenous enhancement but in our case, the lesion is non-enhancing on post-contrast CT. Though there is no contrast enhancement in our case undifferentiated pleomorphic sarcoma, fibrosarcoma, and inflammatory myofibroblastic tumors were considered as the imaging differential's

Exploratory Laparotomy And Excision Of The Mass Were Done.

On histopathological examination, there was granulomatous inflammation with necrosis (Figure 6) and numerous fungal hyphae on the GMS stain (Figure 7) with foci of angioinvasion. ZN stain does not show acid-fast bacilli. There was no evidence of malignant neoplasm. On fungal culture, *Aspergillus fumigatus* growth was seen.

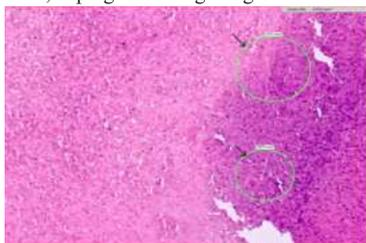


Figure 6: Histopathology slide of excisional biopsy specimen showing granulomatous inflammation with necrosis (marked with arrows) and foci of angioinvasion.

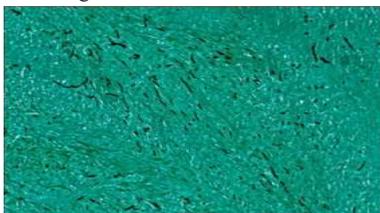


Figure 7: Grocott's silver methenamine stain (GMS) on excisional biopsy specimens shows numerous fungal hyphae appearing septate with acute, obtuse-angled branching.

DISCUSSION:

Aspergilloma (fungal ball) consists of masses of fungal mycelia, inflammatory cells, fibrin, mucus, and tissue debris, usually developing in a preformed lung cavity(1). The organs most commonly involved in invasive aspergillosis are the lungs, followed by the paranasal sinuses and the central nervous system [2]. Although rare, intestinal involvement and intra-abdominal solid organ involvement in the form of abscess formation can occur [3]. It is very unusual for a fungal infection to present as a solid retroperitoneal mass. To the best of our knowledge, the present case of a retroperitoneal aspergilloma with no surgical history is only the third report in the literature.

There were only two cases of retroperitoneal aspergilloma reported in the literature previously by Butros, Selim R et al in a healthy 8-year-old boy who is immunocompetent with no significant past history(4) and by Shinoki, Risa et al in a 65-year-old man, who had been receiving immunosuppressive treatment for rheumatoid arthritis with vasculitis for 9 years (5).

In a case report by Butros, Selim R et al on abdominal MR imaging large retroperitoneal mass showed heterogeneously low signal intensity on T2-weighted sequences similar to imaging findings in our case.

In a case report by Shinoki, Risa et al imaging findings on CECT were non-enhancing mass in the retroperitoneum similar to our case. On abdominal magnetic resonance imaging, in both T2 and T1-weighted images, the mass is of mixed heterogeneous nature of the high low signal, with signal strength decreasing on the T1 fat suppression images, whereas in our case the mass is predominantly hypointense on both T2 and T1-weighted images with no loss of signal on STIR images.

Low T2 signal in masses can be seen secondary to the cellularity of the tissue as in lymphoma and neuroblastoma, but it can also be seen secondary to chronic fibrotic tissue and due to the presence of iron, manganese, and magnesium in the fungal concretion.

CONCLUSION: Our patient had a history of pleural Tuberculosis and was treated with anti-tuberculosis treatment; recurrence was ruled out by pleural tap. Fungal cultures of pleural fluid were also negative. He is a known case of diabetes. There was no previous surgical history in the abdomen either. Hence, this case presents a unique case of Aspergillus infection in an unusual location. On imaging in the above case, the low T2 signal and T1 signal in the mass is due to the presence of iron, manganese, and magnesium in the fungal concretion.

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