Case Report

Disseminated Omental and Liver Tuberculosis Mimicking Metastatic Deposit - Role of Image Guided FNA/Biopsy- A Case Report

Majed B Momin[1], Sandeep S[2], Anamika Aluri[3], Abhijeet I[4], Karishma Rosann Pereira[5]

[1, 4] Consultant Pathologist
[2] Consultant Radiologist
[3] Consultant Biochemist & HOD Lab
[5] Co-ordinator
Medical Publications
Yashoda Hospital
Malakpet, Nalgonda X-Roads
Hyderabad - 500036.

CORRESPONDENCE:

Dr. Majed Momin
Consultant Pathologist
Department of
Laboratory Medicine
Yashoda Hospital, Malakpet
Nalgonda X-Roads
Hyderabad - 500036.
Email :
majedmomin878@yahoo.co.in

ABSTRACT

Tuberculosis is one of the common infection in developing countries, like India and affecting almost any organ or system. Omentum and liver tuberculosis together are rare form of disseminated tuberculosis. Here we reported a 49, year male, presented with abdominal pain, loss of apetite and loss of weight. On ultrasound abdomen displayed ascites with omental caking and illdefined lesion in liver worrisome for metastatic deposit. Ultrasound guided FNA and gun shot biopsy performed from liver and omentum respectively. Gene Xpert sampling, cytology smear from liver and histological examination from omentum biopsy reveal tuberculus granulomatous inflammation.This unusual presentation highlights the considerable diagnostic challenge, importance of image guidence FNA/Biopsy and recently advanced molecular techniques have provided a new approach to the rapid diagnosis of tuberculosis by polymerase chain reaction (PCR) and helps in early management.

Key Words: Omental TB; liver TB; image guided FNA/Biopsy, diagnosis

INTRODUCTION

Abdominal tuberculosis is sixth most common site for extra-pulmonary tuberculosis(ETB), comprising of tuberculosis of gastrointestinal tract, peritoneum, omentum, mysentery and its lymph nodes and other abdominal organs such as liver, spleen and pancreas. The extrapulmonary tuberculosis involves 11-16% of all patients of tuberculosis out of which 3 to 4% belong to abdominal tuberculosis.The co-existence of omental and hepatic tuberculosis is common amongst HIV- infected or immunocompromised patients.[1]

Image guided fine needle aspiration cytology (FNAC)/ biopsy has emerged as the first line of investigation in the assessment of radiologically detected lesions. This is a safe, less traumatic, rapid and easy method compared to larger core or open biopsy. This procedure is cost effective as well as easier to repeat, if necessary.[2]

The rapid detection of M. tuberculosis and rifampin (RIF) resistance in infected patients using GeneXpert real time PCR is essential for disease management and emergence of MDR-TB and extensively drug resistant tuberculosis. Culture is the "gold standard" for final determination, but it is slow and may take up to 2 to 8 weeks. Although smear microscopy for acid-fast bacilli (AFB) is rapid and inexpensive, it has poor sensitivity and a poor positive

predictive value (PPV). Thus, rapid identification, which is essential for earlier treatment initiation and improved patient outcomes.[3]

CASE HISTORY

A 49- year old male,immunocompetent, known case of Cirhosis of liver with portal hypertension presented with pain in abdomen,abdominal distension, loss of apetite for five days. He denied history of alcohol consumption. On physical examination he had pale conjunctiva. Per abdomen examination reveal abdominal distension, shifting dullness and mild hepatomegaly.Initial laboratory studies showed hemoglobin of 8.9gm% with normal white blood cells count, differential and platelets. ESR was increased 102mm/hr Liver function test show bilirubin of 1.4mg/dl (direct 0.2 and indirect 1.2mg/dl), elevated alakaline phosphatase 140U/L, total protein 7.8mg/dl with globulin 4.1mg/dl and albumin 3.7mg/dl. PT & APTT was normal.Viral serology for HIV, HBsAg & HCV non reactive. Serum creatinine and blood urea level were normal. Complete urine examination was normal.

Chest X ray show normal study.Ultrasound abdomen examination showed moderate amount of ascitis with omental caking(infiltration of omental fat by material of soft tissue density) & thickening. Liver was enlarged in size with mild surface irregularity and nodularity. Also illdefined, hypoechoic lesion with areas of liquification measuring 34x30mm noted in right lobe of liver. He underwent a work-up for malignancy with rare cause of tuberculus etiology in mind. A biopsy was performed using a BARD Magnum core biopsy needle and gun under real time USG guidance. Three passes were made from the skin to the area of omental thickening. The biopsy specimen was sent for histopathological examination.

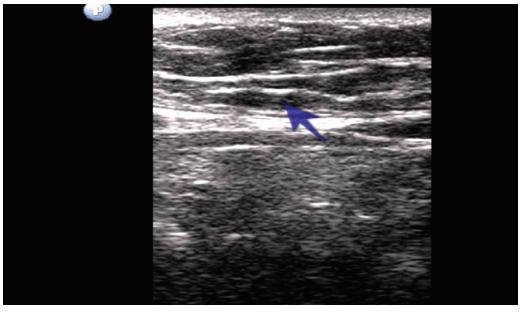

Figure: 1 Sagittal USG image shows thickened omentum (blue arrow)

USG guided FNAC done from liver SOL using lumbar puncture needle (Black head 22 guage). Two passes were made,one for cytology and other pass sample collected for genexpert by PCR.

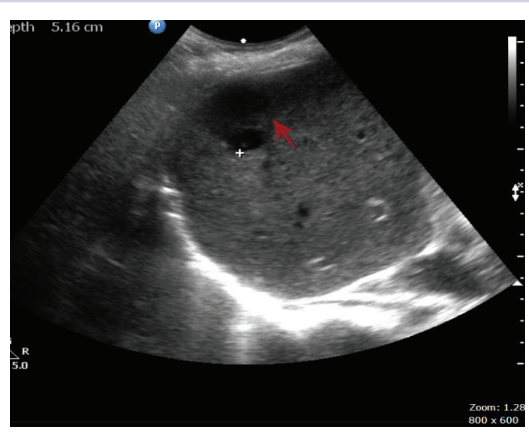

Figure : 2 a - Right lobe of liver with illdefined hypoechoic lesion (red arrow)

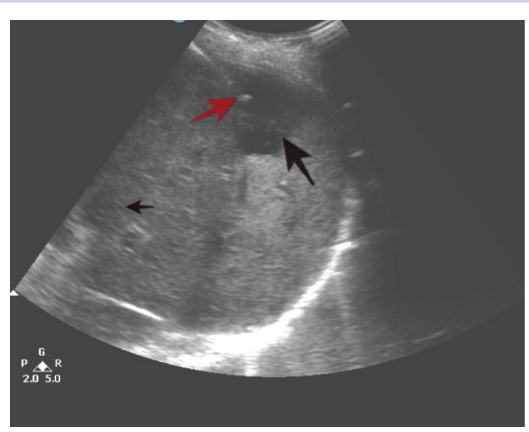

Figure : 2 b - The needle tip (red arrowhead) is seen within

FNAC aspirate from liver lesion showed many granulomas consisting epitheloid cells & focal areas of necrosis. Stain for AFB stain(Ziehl-Neelsen stain) came positive. Gene Xpert MTB/RIF Assay for Mycobacterium Tuberculosis by catridge based nucleic acid amplication test detected medium density bacilli.

Diagnostic paracentesis revealed WBC OF 1800 WITH 96% of lymphocytes. Fluid cytology negative for malignancy. However ADA level was high 42. Based on early FNAC liver lesion with positive AFB, ascitic fluid, geneX-pert findings diagnosed as hepatic tuberculosis while histopathological findings confirms disseminated TB. Patient kept on Anti-tuberculus therapy with hematinics supplement on same day.

The treatment response was difficult to assess as the patient did not have symptoms pertaining to tuberculosis.

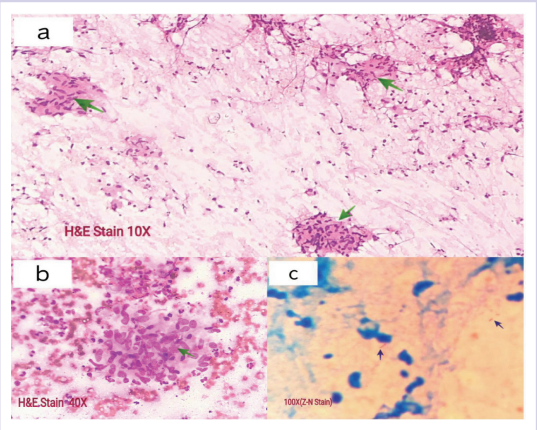

Figure3: a; Cytology smear a; H&E Stain (10X) Granulomas (green arrow), b; High power(40X) Granuloma c; Z-N Stain show positive AFB

Histopathological examination from omental biopsy revealed numerous granulomas consisting epitheloid cells, Few multinucleated giant cells and positive acid fast bacillus on Z-N staining.

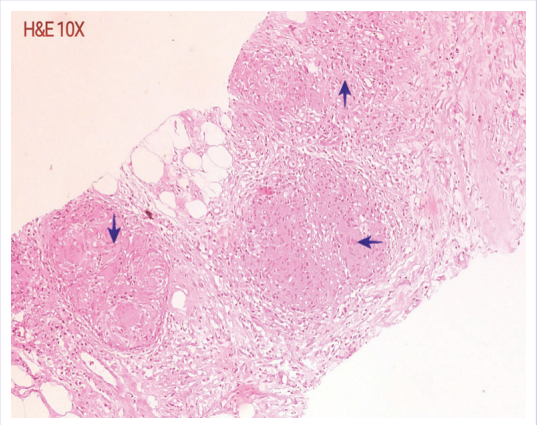

Figure 4 : Histopathology 4a; Omental biopsy(10x H&E) 4b; Granulomas(blue arrow) with giant cells(red arrow)

DISCUSSION

Though tuberculosis is very common in our country, disseminated form of omentum and liver is rare entity and very few cases have been reported in the literature. Peritoneal involvement occurs in 4-10% patients of extrapulmonary tuberculosis. Involvement of liver and spleen in tuberculosis occurs as a part of disseminated and military tuberculosis and is usually granulomatous.

Diagnosis of omental and liver tuberculosis is often difficut, because of unusual clinical presentation. Non-specific laboratory and radiological findings and because of the insensitivity and non-specificity of clinical and biochemical test. Diagnosis is usually depended on peritoneal biopsy by laproscopy or laprotomy.[4] Also the coexistence of cirrhosis in patients with tubercular peritonitis and hepatic tuberculosis complicates the diagnosis,like in our case.

Tubercular peritonitis present in three different types as (a) "wet-ascitic", (b) "fibroitic-fixed" and (c) "dry-plastic" type Omental involvement as part of "fibrotic-fixed" type of tubercular peritonitis is seen as an irregular mass classified as nodular/smudge/or caked appearances due to infiltration of omentum by tubercular lesions. Such lesions difficult to differntiate from metastatic deposit from infective etiology on ultrasound and other imaging technique.[5]

An elevated adenosine deaminase (ADA) level (> 32U/L) in ascitic fluid could obviate the need for more invasive and expensive diagnostic tests. Although false negative results may occur when the ascitic fluid total protein concentration is low as in cirrhosis.[6]

Surgical biopsy is gold standard for diagnosis, however ultrasound guidence biopsy or FNAC is more useful since it is quicker and less expensive in addition it is not associated with radiation hazards as with a CT guided biopsy. In present case omental thichening ideal for guided biopsy while solitary lesion with areas of liquification is ideal for Ultra sound FNAC and sampling for gene Xpert .

Hepatic TB secondary to pulmonary or intestinal TB is more common. Liver is common site for granuloma formation because of its rich blood supply. However primary hepatic TB is rare because low oxygen tension in the liver is unfavourable for growth of mycobacteria.[7] Three forms of hepatic TB were described, namely diffuse miliary TB, granulomatous hepatitis and localised form. The localised form includes solitary or multiple tuberculomas and tuberculous abscesses with or without bile duct involvement. [8]

Solitary liver lesions also difficult to differentiate from neoplastic and non-neoplastic etiology on radiological imaging. In recent years, the F-18 FDG PET/CT is widely used in the diagnosis and staging of malignant tumors, but prone to misdiagnosis in the diagnosis of hepatic tuberculosis, because the hepatic tuberculosis also showed FDG-avid.[9]

The Xpert MTB/RIF assay is a semiquantative nested real-time PCR for detection of Mycobacterium tuberculosis complex DNA and rifampicin-resistance associated mutations of rpoB gene in samples from patients at risk for rifampin resistence. A positive test result does not

necessarily indicate presence of viable organisms. It is however, presumptive for presence of MTB and RIF resistance.[10]

The treatment of disseminated tuberculosis is on the same lines as for pulmonary tuberculosis. Conventional antitubercular therapy for at least 6 months including initial 2 months of HREZ (e.g. isoniazid, rifampicin, ethambutol and pyrazinamide) followed by 4 month HR is recommended in all patients with disseminated tuberculosis.[11] Studies have now shown that even obstructing intestinal lesions can be successfully treated with antitubercular drugs without the need for surgery and complete resolution of radiological abnormalities may occur.

CONCLUSION

To conclude, tuberculosis of omentum and liver together are rare form of disseminated tuberculosis. Despite advances in diagnostic facilities it is difficult to diagnose extrapulmonary tuberculosis on imaging technique alone. High index suspicion and Image guided FNA/biopsy with sampling for gene X-pert is best way to differentiate and diagnose disseminated tuberculosis early and prevents not only invasive and expensive surgery but also complications.

CONFLICT OF INTEREST :

The authors declared no conflict of interest

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REFERENCES

1. Sharma SK, Mohan A. Extrapulmonary tuberculosis. *Ind J Med Res.* 2004; 124:316-53.

2. Swamy MCM , Arathi CA , Kodandaswamy CR. Value of ultrasonography guided fine needle aspiration cytology in the investigative sequence of hepatic lesions with an emphasis on hepatocellular carcinoma. *J Cytol.* 2011; 28:178-184.

3. Anonymous. 2009. Updated guidelines for the use of nucleic acid amplification tests in the diagnosis of tuberculosis. *MMWR Morb. Mortal.* Wkly. Rep. 58:7-10.

4. Naz F, Chaudhary ZA, Haq A, Ahad A. Abdominal tuberculosis, A review of 25 cases. *Ann King Edward Med Coll.* 1999; 5:180-3.

5. Sheikh M, Mossa I, Hussein FM, Qurttom MA, Behbehani Al, Ultrasonic diagnosis in abdominal tuberculosis. *Australas Radiol.* 1999; 43:175-9.

6. Fernandez- Rodriguez CM, Perez-Arguelles BS, LedoL,Garcia-Vila LM, Pereira S, Rodriguez- Martinez D. Ascites adenosine deaminase activity is dcreased in tuberculous ascites with low protein content. *Am J Gastroenterol.* 1991; 86:1500-3

7. Singh S, Jain P, Aggarwal G, Dhiman P, Singh S and Sen R. Primary hepatic tuberculosis: A rare but fatal clinical entity if undiagnosed. *Asian Pac J Trop Med.* 2012; 5:498-9.

8. Alvarez SZ. Hepatobiliary tuberculosis. *J Gastroenterol Hepatol.* 1998; 13:833-9.

9. Wang YT, Lu F, Zhu F, Qian ZB, Xu YP and Meng T. Primary hepatic tuberculoma appears simi-lar to hepatic malignancy on F-18 FDG PET/CT. *Clin Nucl Med.* 2009; 34:528-9.

10. Automated Real time Nucleic acid Amplification Technology for rapid and simultaneous Detection of Tuberculosis and rifampicin Resistance:Xpert MTB/RIF System; Policy statement ; *WHO,* 2011.

11. Sharma MP, Bhatia V. Abdominal tuberculosis. *Ind J Med Res.* 2004; 120:305.