A Case Report of an Uncommon Extra-Pulmonary Tuberculosis Presenting as an Isolated Tuberculous Liver Abscess in a 63-year-old Immunocompetent Male

Lucas Emir Sheikh R. Saturinas, MD,[1] Elfleda A. Hernandez, MD[2]

ABSTRACT:

BACKGROUND: Hepatic or liver tuberculosis is an uncommon form of extra-pulmonary tuberculosis which accounts for less than 1% of all tuberculous infections. Furthermore, tuberculous liver abscess (TLA), a subset of hepatic tuberculosis is extremely rare with a prevalence of 0.34% and is usually associated with foci of infection either in the lung, gastrointestinal tract, or an immunocompromised state.

CASE PRESENTATION: A case of a 63-year-old immunocompetent male, with no history of prior pulmonary tuberculosis, was initially diagnosed with pyogenic liver abscess and treated with empiric two-week therapy of Metronidazole 500mg/tab 1 tablet TID and Ciprofloxacin 500mg/tab 1 tablet BID. However, there was the persistence of right upper quadrant pain and jaundice despite compliance to therapy, hence admission. Initial antibiotics were re-initiated and subsequently underwent ultrasound-guided liver aspiration draining a thick, light brown abscess. Microbiologic cultures of the abscess turned out negative but AFB smear revealed 1+ on the AFB national TB program scale signifying 10-99 AFB seen/ 100 visual fields in at least 50 fields. Currently, there are no local treatment recommendations specific for isolated tuberculous liver abscess, thus was empirically started on 2HRZE/4HR for six months. On follow-up, the patient had no recurrence of liver abscess via a repeat ultrasound of the whole abdomen.

CONCLUSION: This is an uncommon presentation of extra-pulmonary tuberculosis, an isolated tuberculous liver abscess in an immunocompetent male presenting with persistent right upper abdominal quadrant pain and jaundice. Despite the endemicity of tuberculosis in the Philippines, an isolated tuberculous liver abscess is uncommon or often overlooked. The excellent clinical prognosis of these patients with appropriate therapy necessitates timely diagnosis of this infrequent clinical entity and will prevent further unnecessary surgical interventions.

Keywords: *tuberculosis, extra-pulmonary tuberculosis, liver abscess, case report*

INTRODUCTION

According to the 2020 WHO Global Tuberculosis Report, the incidence of tuberculosis in the Philippines is estimated to 599,000 and 530 cases per 100,000 populations per year with male predilection aged more than 14 years old. Extra-pulmonary tuberculosis only accounts for 2% of Filipinos with tuberculosis. Furthermore, hepatic tuberculosis is uncommon and is evident for less than 1% of all tuberculous infections.[1] Its rare occurrence is due to the low tissue oxygen tension in the liver, which is unsuitable for mycobacterial growth. Tuberculous liver abscess, a subset of hepatic tuberculosis is usually associated with foci of infection either in the lung, gastrointestinal tract, or with an immunocompromised state. An isolated or

[1] Internal Medicine Resident,
Department of Internal Medicine, Cebu Velez General Hospital
[2] Infectious Disease Specialist,
Department of Internal Medicine, Cebu Velez General Hospital

Presented at the 7th Conference of the Union Asia-Pacific Regional Conference (APRC), April 2019
Third place winner at the PCP-Central Visayas Case report poster contest, November 2018

Corresponding Author
Lucas Emir Sheikh R. Saturinas, MD
eMmail address: sheikhsaturinas@gmail.com

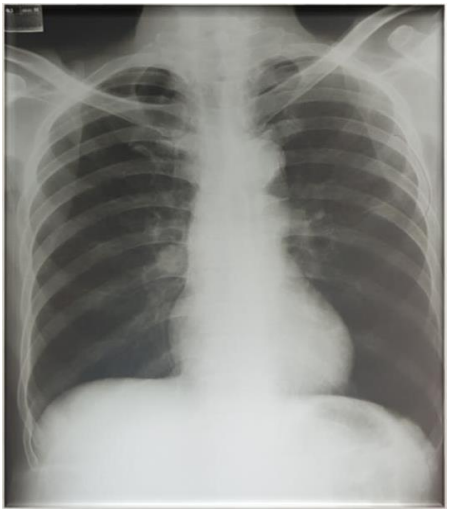
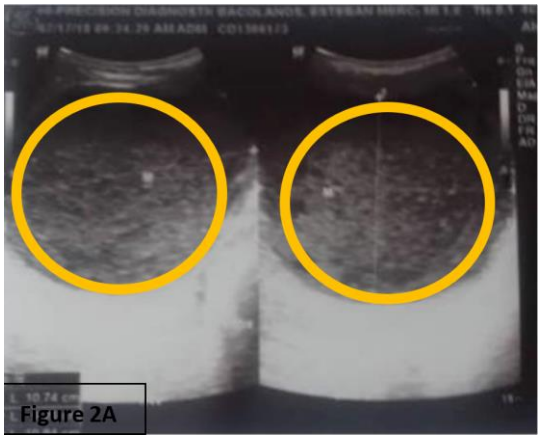


Figure 1. Chest radiograph of patient showing normal findings



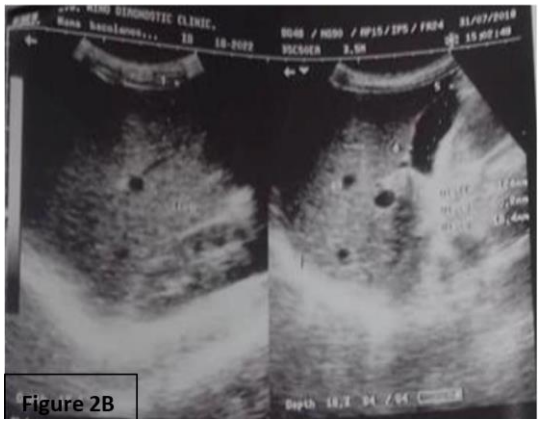


Figure 2. (Top) Admission ultrasound of the whole abdomen of the patient. Encircled in yellow is a 10.7cm x 9.2cm x 10.8cm thick-walled complex mass within the right lobe of the liver with echogenic debris signifying a liver abscess. (Bottom) Repeat ultrasound of the whole abdomen a month after liver abscess aspiration and intensive quadruple anti-tuberculous therapy. The liver is not enlarged with a homogenous parenchymal echo pattern. No parenchymal cystic or nor solid masses were demonstrated. There is a complete resolution of liver abscess.

primary TLA with no evidence of tuberculosis elsewhere is even rarer and will be elaborated by the case presented below.[2]

CASE PRESENTATION

This is a case of a 63-year-old male, farmer with no known comorbidities (e.g., cardiovascular disease, malignancy, genetic defects, personal or familial psychiatric issues) sought admission in a tertiary hospital due to a two-month history of persistent right upper quadrant pain associated with body malaise, anorexia, jaundice, and weight loss. The patient was previously treated at a local district hospital as a case of pyogenic liver abscess based on ultrasound findings and was treated with Ciprofloxacin 500mg per tab twice a day and Metronidazole 500mg per tab thrice a day for two weeks taken with good compliance. The persistence of right upper quadrant pain and jaundice prompted consult hence admission.

Upon admission, vital signs were within normal limits. Pertinent physical examination findings were icteric sclerae, hepatomegaly (MCL:14cm; MSL:4cm), with tender palpable liver edge two centimeters below the subcostal margins. Admitting workup laboratory tests revealed leukocytosis with neutrophilic predominance, an unremarkable chest radiograph (*Figure 1*), and a repeat hepatobiliary ultrasound discovered a 10.7 x 9.2 x 10.8 cm thick-walled complex mass within the right lobe of the liver with echogenic debris noted signifying a liver abscess formation (*Figure 2 Top*).

Ciprofloxacin 500mg/tablet taken one tablet twice a day and Metronidazole 500mg IV infusion every eight hours were re-initiated as empiric treatment for the suspected pyogenic abscess. Ultrasound-guided aspiration of the hepatic abscess with pigtail insertion was performed draining an initial amount of 445 ml of thick, light brown abscess from the liver.

Routine liver abscess gram stain, culture, and sensitivity showed no growth after five days.

However, AFB smear of liver abscess revealed 1+ on the AFB national TB program scale which signifies 10-99 AFB seen/100 visual fields in at least 50 fields, thus the diagnosis of isolated extra-pulmonary tuberculous liver abscess.

The patient was referred to an infectious specialist, and additional sputum AFB smears were requested which turned out negative for two successive specimens. Empiric treatment for a tuberculous liver abscess with a fixed-dose combination tablet composed of isoniazid(H) 75 mg, rifampicin(R) 150 mg, pyrazinamide(Z) 400 mg, and ethambutol(E) 275 mg per tablet three tablets taken once daily was started. There was a resolution of fever and gradual improvement of the right upper quadrant pain.

The patient was subsequently discharged on the fifth hospital day with improved condition with regular follow-ups thereafter. As per the review of this rare therapeutic

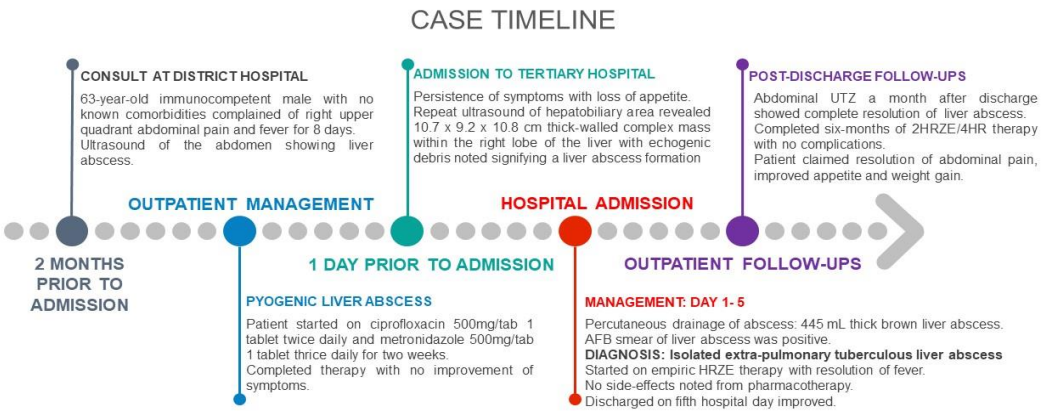


Figure 3. Timeline of case

dilemma and advice of the attending infectious specialist, informed consent was presented to the patient for documentation and request for consistent follow-up. On out-patient follow-up a month from hospital discharge, the patient observed resolution of abdominal pain and jaundice, improved appetite, and weight gain. A repeat ultrasound of the hepatobiliary area post-abscess drainage revealed complete resolution of liver abscess. (*Figure 2 Bottom*). The patient also completed a six-month course of anti-tuberculous therapy without complications. A case timeline of the patient's presentation, admission, management, and follow-up are summarized in *Figure 3*.

DISCUSSION

Hepatic or liver tuberculosis is an uncommon form of extra-pulmonary tuberculosis which accounts for only less than 1% of all tuberculous infections.[1,2] It is rare due to relatively low tissue oxygen tension in the liver, which is unfavorable for mycobacterial growth. Reed et. al, have also described three morphologic types of hepatic tuberculosis: 1) miliary tuberculosis of the liver associated with generalized miliary tuberculosis, 2) primary miliary tuberculosis of the liver without the involvement of other organs, and 3) primary tuberculous granuloma or abscess of the liver. Liver involvement with *Mycobacterium tuberculosis* has been reported in 7.5% of people living with HIV and pulmonary tuberculosis.[4] Here in the present case, the patient was immunocompetent and there was no evident focus of tuberculosis elsewhere in the body.

A tuberculous liver abscess (TLA) is extremely rare with a prevalence of 0.34%.[5] Isolated hepatic tuberculoma is the rarest type of tuberculous lesion in the liver and it often mimics a neoplastic liver disease (primary or solitary metastatic nodule).[6] Interestingly, there was no associated active pulmonary or miliary tuberculosis in half of the cases. The disease may present at any age but is most commonly seen in young adults.[7] Patient age has ranged from 6 months to 72 years, with an average of 39.2 years.

Isolated liver tuberculosis also poses a diagnostic dilemma because of its non-specific clinical presentation. Symptoms of the disease include fever, vague abdominal pain, anorexia, and weight loss. Hepatomegaly is a common physical finding. Jaundice is a very rare manifestation of tuberculous liver abscess which was present in the index case and may be caused by extra- or intrahepatic obstruction.[8] The invasive or percutaneous procedure is always necessary for the diagnosis of TLA either by autopsy, drainage of the abscess, or occasionally after laparotomy has been performed.[9]

Confirmation of the diagnosis depends on the demonstration of acid-fast bacilli (AFB) in the purulent pus, isolation of *Mycobacterium tuberculosis* in culture, positive *GeneXpert MTB/Rif*, ELISA, or PCR for *Mycobacterium tuberculosis*. In this patient, the abscess was positive for AFB, thus the diagnosis of isolated extra-pulmonary tuberculous liver abscess.

Mycobacterium tuberculosis is most easily found in caseous necrotic material but even the absence of AFB should not detract from diagnosis, especially in a country with a high prevalence of tuberculosis such as the Philippines.[1]

Anti-tuberculosis therapy alone or percutaneous aspiration along with anti-tuberculous therapy is the preferred therapeutic option.[10] The 2020 Philippine National Tuberculosis Control Program: Manual of Procedures 6th edition, strongly recommends treatment of extra-pulmonary liver tuberculosis in general with a two-month intensive therapy with Isoniazid(H) 75 mg, Rifampicin(R) 150 mg, Pyrazinamide(Z) 400 mg, and Ethambutol(E) 275 mg per tablet followed by a four-month continuous treatment with Isoniazid(H) 75 mg, Rifampicin(R) 150 mg per tablet given via individual tablets or weight-adjusted fixed-dose combination (HRZE/HR) tablets.[11] Quadruple fixed-dose combination oral therapy with percutaneous liver abscess drainage was performed in the index case. However, to date, there has been no specific local treatment recommendations for isolated tuberculous liver abscess, potentially attributed to the scarcity of reported cases.

A systematic review of the epidemiology, diagnosis, and treatment of hepatic tuberculosis involving 618 patients showed that 6 to 12-month treatment duration appears to

be effective. Of the 14-case series included, nine (n=323) reported on treatment regimens and outcomes. In a cohort of 96 patients with hepatic TB receiving either < 2 drugs (n=10), > 2 drugs but no HR (n=29), HR + others (16), and no treatment (37), the mortality rate was 42% and mostly among those without treatment and receiving monotherapy.[12] Furthermore, positive clinical responses observed in the study include improved appetite, reduced hepatomegaly, weight gain, resolution of fever, and decreased jaundice. Based on this review, it appears that prognosis is excellent upon early initiation of combination therapy compared to non-initiation of treatment and the use of monotherapy. Therefore, basing on the outcome of this case, early detection of isolated extra-pulmonary tuberculous liver abscess and timely intervention of percutaneous drainage, and prompt initiation of standard anti-tuberculous guideline-directed therapy is substantial.

CONCLUSION

This is a rare presentation of extra-pulmonary tuberculosis, an isolated tuberculous liver abscess (TLA) in a 63-year-old immunocompetent male presenting with persistent right upper abdominal quadrant pain and fever, previously treated with antibiotics for pyogenic liver abscess. The patient underwent aspiration of liver abscess with a positive AFB smear and was empirically started on fixed-dose combination therapy composed of isoniazid(H) 75 mg, rifampicin(R) 150 mg, pyrazinamide(Z) 400 mg, and ethambutol(E) 275 mg per tablet three tablets are taken once daily for isolated tuberculous liver abscess. After a month of treatment, the index case on follow-up had complete resolution of the liver abscess on repeat ultrasound with clinically improving abdominal pain, resolution of jaundice, improvement of appetite, and weight gain. The patient also completed a six-month course of anti-tuberculous therapy without complications.

In conclusion, despite the endemicity of tuberculosis in the Philippines, an isolated tuberculous liver abscess is uncommon or often overlooked. To date, there has been no local prevalence data due to its rarity. Therefore, based on the clinical outcome of this case, early detection of isolated extra-pulmonary tuberculous liver abscess and timely intervention of percutaneous liver abscess drainage with prompt initiation of standard anti-tuberculous guideline-directed therapy is substantial as evidenced by excellent clinical prognosis and astounding improvement on out-patient follow-up.

Conflicts of Interest: None

REFERENCES:

1. Chong VH. Hepatobiliary tuberculosis: a review of presentations and outcomes. South Med 2008; 101: 356-3612. Interventional Cardiology Clinics: Carotid and Cerebrovascular Disease, White CJ, Rosenfield K, January 2014, Volume 3. P127
2. Isolated liver tuberculosis abscess in a patient without immunodeficiency: A case report. Karim Ibn Majdoub Hassani, Abdelmalek Ousadden, Amal Ankouz, Khalid Mazaz, Khalid Ait Taleb. World J Hepatol 2010 September 27; 2(9): 354-357
3. Bangroo AK, Malhotra AS. Isolated hepatic tuberculosis. J Indian Assoc Pediatr Surg. 2005;10(2):105– 7
4. Amarapurkar DN, Chopra KB, Phadke AY, Sahni S, Prabhu SR, Kalro RH. Tuberculous abscess of the liver associated with HIV infection. Indian J Gastroenterol 1995; 14:21-2.
5. Isolated tubercular liver abscess in an elderly diabetic successfully treated with systemic antitubercular drugs. Rai R, Tripathi VD, Rangare V, Reddy DS, Patel P. J Pak Med Assoc. 2012 Feb; 62(2):170-2.
6. Khan ZR, Chowdhury MM, Saif Uddin M, Taher MA. A Case Report: Isolated Liver Tuberculosis. BSMMU J. 2009;2(2):88–9.
7. Tatco V, Mejia-Santos MM, Uy J: The Many Faces of Hepatic Tuberculosis. Cross-Sectional Imaging Manifestations. WFPI TB Corner 2015; pp 1-6
8. RB, Bhaduri A, Shah SR: Hepatic tuberculosis in absence of disseminated abdominal tuberculosis. Ann Hepatol 2006, 51(1):41-43.
9. Isolated tuberculous hepatic abscess in a non-immunocompromised patient. Balsarkar D, Joshi MA. J Postgrad Med. 2000 Apr-Jun; 46(2):108-9.
10. Primary tubercular liver abscess in an immunocompetent adult: a case report. Baveja C, Gumma V, Chaudhary M, Jha H. J Med Case Rep. 2009 Oct 15; 3():78.
11. Department of Health National Tuberculosis Control Program: Manual of Procedures 6th Edition. 2020.
12. Clinical Practice Guidelines for the Diagnosis, Treatment, Prevention, and Control of Tuberculosis in Adult Filipinos, 2016 Update.