



## Primary Tuberculous Abscess of the Liver: A Case Report and Literature Review

Youssef El Mahdaouy<sup>1</sup>, Yasser El Brahmi<sup>1</sup>, Nouredine Njoumi<sup>1</sup>, Hafsa Chahdi<sup>2</sup>, Mountassir Moujahid<sup>1</sup>, Abdelkader Ehirchiou<sup>1</sup> And Aziz Zentar<sup>1</sup>

<sup>1</sup>Departement Of Surgery, Visceral Surgery II, Mohammed V Military Instruction Hospital. Rabat. Morocco.

<sup>2</sup>Departement Of Pathology, Mohammed V Military Instruction Hospital. Rabat. Morocco.

### ARTICLE INFO

#### Article history:

Received: 9 June 2018;

Received in revised form:

2 August 2018;

Accepted: 15 August 2018;

#### Keywords

Immunocompetent,  
 Liver Abscess,  
 Mycobacterium Tuberculosis.

### ABSTRACT

Extra-pulmonary tuberculosis (TB) is a common bacillary infection in our population but primary tuberculous liver abscess in a non-immunocompromised patient is an extremely rare occurrence. Only a few cases have been reported in the literature to this day to our knowledge. Its management often requires medical treatment or in combination with percutaneous drainage, but it may take on a surgical appearance. We report here a new case of an isolated tuberculous liver abscess extended to the chest wall in a 32 years old female which was successfully managed with surgical approach and anti tubercular therapy. This location presents a considerable diagnosis challenge. It should be considered in the differential diagnosis of liver cystic lesions, especially in a high tuberculosis prevalence country.

© 2018 Elixir All rights reserved.

### Introduction

Hepatic tuberculosis is usually accompanied by pulmonary tuberculosis or tuberculous enterocolitis. The isolated presence of tuberculosis lesions in the liver is extremely rare, there have been only a few cases reported in the world literature. [1].

Hepatic tuberculous localization is typically associated with formation of granulomas that may heal with focal fibrosis and calcification or evolve to form tuberculomas and abscess.

We hereby report an uncommon case of an isolated tuberculous liver abscess (TLA) in an immunocompetent adult with a review of literature.

### Case report

A 32 years old female was admitted to our hospital with painless swelling on the right side of chest and feeling of pressure in the right upper quadrant of abdomen. She has no history of fever, cough, hemoptysis, weight loss, and night sweating or poor appetite. There was no significant past history of any chronic disease. She was no alcoholic and no smoker with no history of any drugs abuse.

There was no previous history of tuberculosis or contact with any tuberculous patient.

On clinical examination, the patient was in good general condition with a normal temperature and a body mass index of 24. The inflammatory tumefaction of the right chest wall was marked. The palpation of the abdomen revealed a sensitive hepatomegaly and a solitary swelling over right lateral chest wall opposite (10<sup>th</sup>-12<sup>th</sup>) ribs (Fig.1). No other physical finding was detected.

The laboratory investigations showed a white blood cell count of 9.10<sup>3</sup>/ml, hemoglobin of 13 g/dl, platelet count of 230.10<sup>3</sup>/ml. The liver and renal functions tests were normal. The C reactive protein (CRP) level was normal.



Figure 1. Solitary swelling over right lateral chest wall opposite 10th -12th ribs.



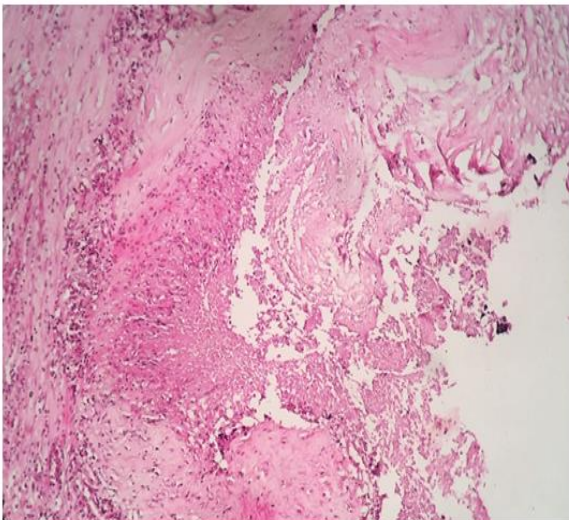
Figure 2. CT scan of the abdomen showing large cystic liver lesion interesting the right liver extending to involve right lateral chest wall.

The chest-X-ray was normal. Further evaluations including hydatid serology test were negative.

A Computed Tomography scan (CT) revealed a large cystic liver lesion interesting the segments V, VI and VII of the right liver extending to involve right lateral chest wall forming a collection in an intermuscular plane (Fig. 2). This appearance was suggestive of a hydatid cyst of the right liver and a surgical management was decided.

Following exposure of the liver by laparotomy, the most prominent portion of the cyst is identified and packed off from the rest of the abdominal cavity with abdominal swabs soaked in a scolocidal solution. The next step consist in a puncture of cyst and aspiration about two liters of purulent liquid, introduction of scolocidal agent and total aspiration thereafter. After partial removal of the cyst, a residual cavity remains which was carefully inspected for evidence of bile leaks and managed by external drainage.

20 cc of the cloudy cream-colored aspirated pus was sent for Zeihl-Neelsen staining, acid fast bacilli (AFB), culture and Polymerase Chain Reaction (PCR) for tuberculosis and other routine microbiological investigations which were all negative. But the cyst wall sent for histology revealed granulomatous inflammation consisting of tuberculoid type granuloma with caseous necrosis (**Fig. 3**).



**Figure 3. Histology revealed granulomatous inflammation consisting of tuberculoid type granulomas with caseous necrosis.**

However, based on the clinical presentation, imaging and histopathological finding, abscess of the liver due to mycobacterium tuberculosis (MT) was highly suspected and anti-tuberculosis therapy was started.

The patient responded well to treatment and follow up ultrasonography showed complete resolution of liver abscess and chest wall swelling.

#### Discussion

MT is the leading cause of death among patients with infectious diseases, but hepatic tuberculosis is a rare form of extrapulmonary tuberculosis [2].

The prevalence of tuberculosis is high in Morocco, even though the occurrence of hepatic tuberculosis is rare. A study from South Africa showed that liver tuberculosis accounted for only 1.2% of all tuberculosis cases [3].

Reason for its rarity is because of low tissue oxygen levels turning it into an unfavorable environment for growth of tubercle bacilli [4].

Tubercle bacilli get disseminated hematogenously from primary focus most commonly in lung or gastrointestinal tract [5]. Because no symptoms and signs of enterocolitis were

observed during the whole disease course, colonoscopy was not prescribed for the patient.

By 1858, Bristowe had reported 12 cases of solitary tubercles of the liver with cavity formation among 167 instances of tuberculous ulceration of the intestine [8].

In 1990, Reed et al described three morphological types of hepatic tuberculosis: miliary tuberculosis of the liver seen along with pulmonary or miliary tuberculosis, primary miliary tuberculosis of the liver without involvement of other organs, and primary tuberculous abscess of the liver [6].

Levine et al added two more types: pulmonary tuberculosis with liver involvement and tuberculous cholangitis [7].

The isolated hepatobiliary form has been uncommonly described with or without biliary involvement and accounts for less than 1% of all tubercular infections [9].

Liver abscess without pulmonary involvement, such as our case, accounts for only 0.34% of all cases of hepatic tuberculosis [10].

In most cases, TLA was a finding in immunocompromised individuals with AIDS, diabetes mellitus, chronic renal failure and steroid treatment [11]. Although our patient presented no risk factors for Human Immunodeficiency Virus (HIV) or signs of opportunistic infections, a HIV test was performed and was negative. So, we failed to identify an immunocompromised state. Less than 25 cases of isolated liver abscess had been reported prior to 2003 [1].

TLA is usually confused with hepatoma, pyogenic or amoebic liver abscess and is often diagnosed at autopsy or after laprotomy because of its non specific presentation [12].

Fever, weight loss and right hypochondrial pain are the most frequent symptoms of this disease. A right hypochondrial tenderness and hepatomegaly are the most common physical findings. An elevated alkaline phosphatase level may be the only positive finding in liver function test. The findings of our patient were comparable to these results. The only difference is the normal alkaline phosphatase level in our patient.

Abdominal ultrasonography scan usually revealed hypoechoic lesions in most cases of TB liver abscess. [13]. However, a hyperechoic lesion was reported in one case [1]. CT scan usually demonstrates a low-attenuation lesion with or without ring enhancement [14].

Thus, the specificity of ultrasonography and CT is low in detecting TLA but in defining the site, size and the nature of the abscess, their value is indispensable [12].

Isolated hepatic tuberculosis is difficult to diagnose. Invasive procedure is always needed. Exploratory laparotomy or autopsy led to the final diagnosis in the past literature [1].

The microbiological or / and histopathological examinations of specimens are needed to make a dignostic and to distinguish from the abscesses or the neoplasm of the liver.

Ziehl-Neelsen staining (aspirated pus) for AFB and culture for MT help in confirming the diagnosis. However, the frequency of AFB detection is 0%-45% and only 10% of cultures yield positive results [6].

Histopathological examination of the specimens from lesions is essential for definitive diagnosis, which depends on the presence of caseating granulomatous lesions or AFB [15]. In the present case, the aspirated pus was negative for AFB and the diagnosis was only suggested by the biopsy of the cyst wall.

Recently, PCR have shown to be useful for the early diagnosis of hepatic tuberculosis [12]. PCR was positive in about 57% of tuberculous hepatic granulomas as compared to other conventional diagnostic methods [16]. In this case, the PCR result was negatif.

Although the initial diagnosis was a hydatid cyst of the right liver in the present case, the histological examination of the cyst (abscess) wall and the specific treatment with anti-tuberculous agents led to the diagnosis of TLA.

Even caseous necrosis does not represent tuberculosis exclusively [17], the treatment outcome of anti-tuberculous regimen confirms the diagnosis indirectly. The lack of a positive tuberculosis culture and PCR results did not influence the final diagnosis, especially in a country with high burden of tuberculosis [18].

Management of TLA includes anti tubercular therapy for one year alone or in combination with percutaneous drainage [1]. Surgical management is usually reserved for cases of multiple unsuccessful attempts of percutaneous aspiration, inaccessible site, and multiseptate nature of the abscess [19].

Another successful treatment modality would be transcatheter infusion of antituberculous agents directly into the lesion after percutaneous aspiration of TLA, which according to some reports was effective than systemic anti-tuberculosis therapy [20].

The prognosis of TLA is good if it is diagnosed early and effective treatment is administered. We managed successfully our case with surgical drainage and with anti tubercular therapy.

#### **Conclusion**

Tuberculous etiology should be thought of in any case of cystic lesions of the liver, particularly in endemic regions with a high prevalence of M. tuberculosis infection. Awareness of this rare clinical entity prevents needless surgical interventions.

**Abbreviations:** TLA; tuberculosis liver abscess, PCR; Polymerase Chain Reaction, MT; mycobacterium tuberculosis, CT; Computed Tomography, AFB; acid fast bacilli

#### **Declarations**

#### **Ethics approval and consent to participate:**

Not applicable.

#### **Consent for publication:**

Written informed consent was obtained from the patient for publication of this Case Report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

#### **Availability of data and materials:**

All data generated or analysed during this study are included in this published article.

#### **Authors' contributions:**

YE wrote the article, made substantial contributions to conception and design of the article; NN made critical assessment of the article and have been involved in drafting it; HF has been involved in interpretation of histopathological data of the patient ; AZ has been involved in drafting the manuscript and revising it critically for important intellectual content, and has given the final approval of the version to be published. All authors read and approved the final manuscript.

#### **Competing interests:**

The authors have none to declare

#### **Funding:**

The authors received no specific funding for this study

#### **Acknowledgements**

Not applicable.

#### **References**

- Chen HC, Chao YC, Shyu RY, Hsieh TY. Isolated tuberculous liver abscesses with multiple hyperechoic masses on ultrasound: a case report and review of the literature. *Liver Int* 2003; 23: 346-50.
- Corbett EL, Watt CJ, Walker N, et al. The growing burden of tuberculosis: global trends and interactions with the HIV epidemic. *Arch Intern Med* 2003; 163: 1009-21.
- Essop AR, Posen JA, Hodgkinson JH, Segal I. Tuberculosis hepatitis: A clinical review of 96 cases. *Q J Med*. 1984; 53 (212): 465-77.
- Kanagaraj A, Marthandam LR, Sriramakrishnan V, et al. Tuberculous liver abscess. *J Assoc Physicians India*. 2008; 56: 647-648.
- Rab SM, Beg MZ. Tuberculous liver abscess. *Brit J Clin Pract*. 1977; 31: 157-8.
- Reed DH, Nash AF, Valabhji P. Radiological diagnosis and management of a solitary tuberculous hepatic abscess. *Br J Radiol*. 1990; 63: 902-4.
- Levine C. Primary macronodular hepatic tuberculosis: US and CT appearances. *Gastrointest Radiol*. 1990; 15: 307-9.
- Bristowe JS. On the connection between abscess of the liver and gastrointestinal ulceration. *Trans Path Soc*. 1958; 9: 241-252.
- Chong VH. Hepatobiliary tuberculosis: a review of presentations and outcomes. *South Med J*. 2008; 101: 356-61.
- Essop AR, Segal I, Posen J, Noormohamed N. Tuberculous abscess of the liver. *S Afr Med J*. 1983;63:825–826.
- Koksal D, Koksal AS, Koklu S, Cicek B, Altiparmak E, Sahin B. Primary tuberculous liver abscess: a case report and review of the literature. *Southern Med J* 2006; 99: 393-5.
- Hassani KI, Ousadden A, Ankouz A, Mazaz K, Taleb KA. Isolated liver tuberculosis abscess in a patient without immunodeficiency: A case report. *World J Hepatol* 2010; 2 (9): 354-7.
- Jain R, Sawhney S, Gupta RG, et al. Sonographic appearances and percutaneous management of primary tuberculous liver abscess. *J Clin Ultrasound* 1999;27: 159-63.
- Yu RS, Zhang SZ, Wu JJ, et al. Imaging diagnosis of 12 patients with hepatic tuberculosis. *World J Gastroenterol* 2004; 10: 1639-42.
- Mourad MM, Liossis C, Algarni A, Kumar S, Bramhall SR. Primary hepatic tuberculosis in immunocompetent adults: a UK case series. *Oxf Med Case Reports* 2014;17:148-50.
- Diaz ML, Herrera T, Lopez-Vidal Y, Calva JJ, Hernandez R, Ruiz Palacios G, et al. Polymerase chain reaction for the detection of Mycobacterium tuberculosis DNA in tissue and assessment of its utility in the diagnosis of hepatic granulomas. *J Lab Clin Med*. 1996; 127: 359-63.
- S.W. Lee, H.C. Lien, and C.S. Chang. Tuberculous liver abscess in a case without lung involvement. *Kaohsiung J Med Sci* February 2010-Vol 26-No 2.
- Bangaroo AK, Malhotra AS. Isolated hepatic tuberculosis. *J Indian Assoc Pediatr Surg*. 2005;10:105–107.
- Pratyush Kumar, Atul Kakar, Atul Gogia. Tubercular liver abscess: A rare presentation of a common disease. *Current medicine research and practice* 5 (2015) 232-234.
- Jain R, Sawhney S, Gupta RG. Sonography appearances and percutaneous management of primary tuberculous liver abscess. *J Clin Ultrasound* 1999; 27:159-63.