



## CASE REPORT

# A patient with Tuberculous para-valvular leak and tuberculous hepatic abscesses treated conservatively with anti-tuberculous medication without the need for surgical intervention. "Case report"

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## ABSTRACT

**Introduction:** We report a case of a young lady with rheumatic heart disease who underwent mechanical prosthetic mitral valve replacement and tricuspid valve repair. The case was complicated after one year by multi system tuberculous abscesses, para-valvular leak and hemolytic anemia.

**Case summary:** The case started one year following mechanical prosthetic mitral valve replacement, and after contact with a tuberculous patient. The lady developed, sterile pyuria, two tuberculous hepatic abscesses, and a big pelvic tuberculous abscess. She first needed percutaneous drainage for the pelvic abscess followed by laparotomy and surgical drainage after recurrence. The case was complicated by Para-valvular leak in the prosthetic mitral valve detected by Transoesophageal echocardiography as well as refractory hemolytic anemia needing multiple transfusions. She required six months of anti-tuberculous therapy for the hemolysis to stop. Treatment continued for a total of one year of anti-tuberculous therapy. The patient restored normal valve dynamics and hematological parameters without the need for surgical intervention for the para-valvular leak.

**Conclusion:** We report this case to show that small tuberculous para-valvular leak and hemolytic anemia as well as tuberculous hepatic abscesses can be treated medically as an alternative option to the well-known and recommended surgical indication. We also confirm delayed healing of the abdominal surgical wound due to tuberculosis.

**Keywords:** Case report, Para-valvular leak, Tuberculous abscess, Hemolytic anemia, Sterile Pyuria.

## Introduction

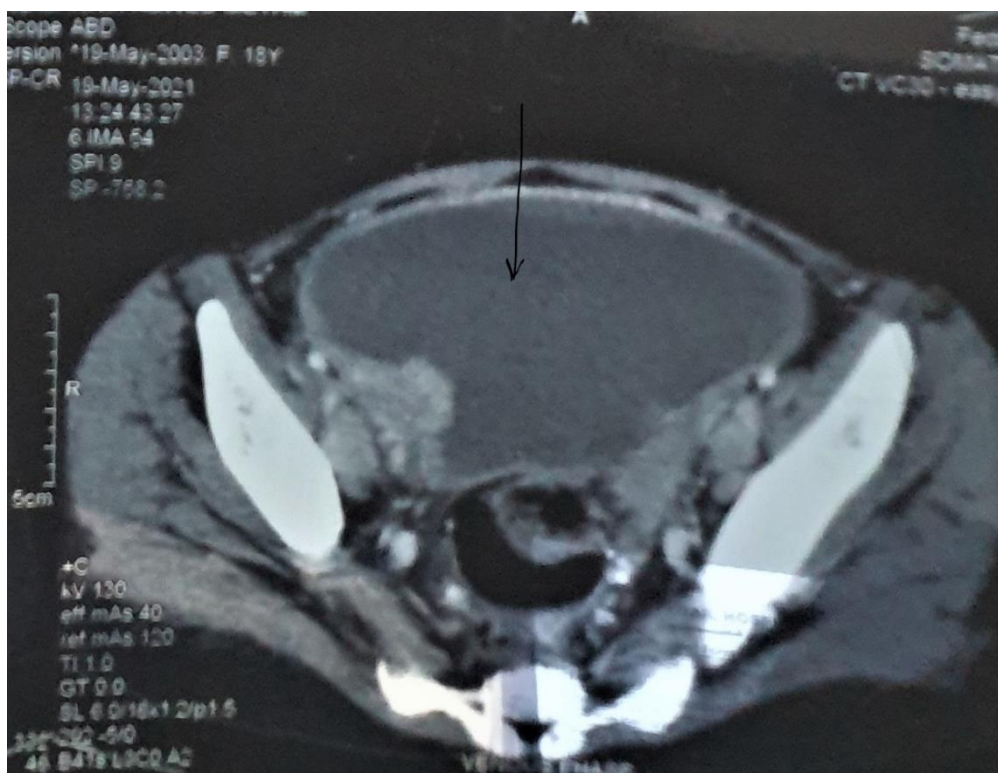
Tuberculous prosthetic valve infection and para-valvular leak can occur as part of disseminated Tuberculosis. Local complications may include endocarditis, abscesses, valve dehiscence as well as hemolytic anemia. Tuberculous prosthetic valve infection is rare but it carries high mortality and is often diagnosed at autopsy. Patients are usually with HIV infection or they are immunocompromised. In this case report, we treated complicated tuberculous valve infection, para-valvular leak, and hemolytic anemia in an immunocompetent patient with prolonged medical therapy without the need to proceed for surgical intervention.

## Case History:

Our patient is a 16 year- old girl, diagnosed as rheumatic heart disease with severe mitral and tricuspid valve regurgitation. She underwent bi-leaflet mechanical prosthetic mitral valve replacement (Medtronic size 27) and tricuspid valve repair. She did well after her surgery with normal dynamics in both valves. Her post-surgical mitral valve mean gradient was around 4 mmHg.

One year later the patient presented with loss of appetite, low grade fever, recurrent urinary tract infections for more than a month duration, followed by ascites and lower limb edema. Urinary analysis confirmed pyuria and there was no response to the standard antibacterial management. Urine cultures were negative for growth. She tested negative for HIV and Hepatitis B and C as well. Transthoracic echocardiography showed normal hemodynamics in both valves. Laboratory parameters showed normochromic normocytic anemia with a hemoglobin of 6 and high inflammatory markers. C-reactive protein of more than 200, erythrocyte sedimentation rate (ESR) of above 100, and low serum albumin of 3 were seen. Abdominal ultrasonography showed significant ascites and two hypoechoic lesions in the liver suggestive of abscesses as well as a huge pelvic collection measuring (13 cm x 15 cm). Abdominal computed tomography (CT) confirmed the ultrasound findings. The hepatic abscess measured 2.3 cm and 2.7 cm on CT (Fig 1 and 2).

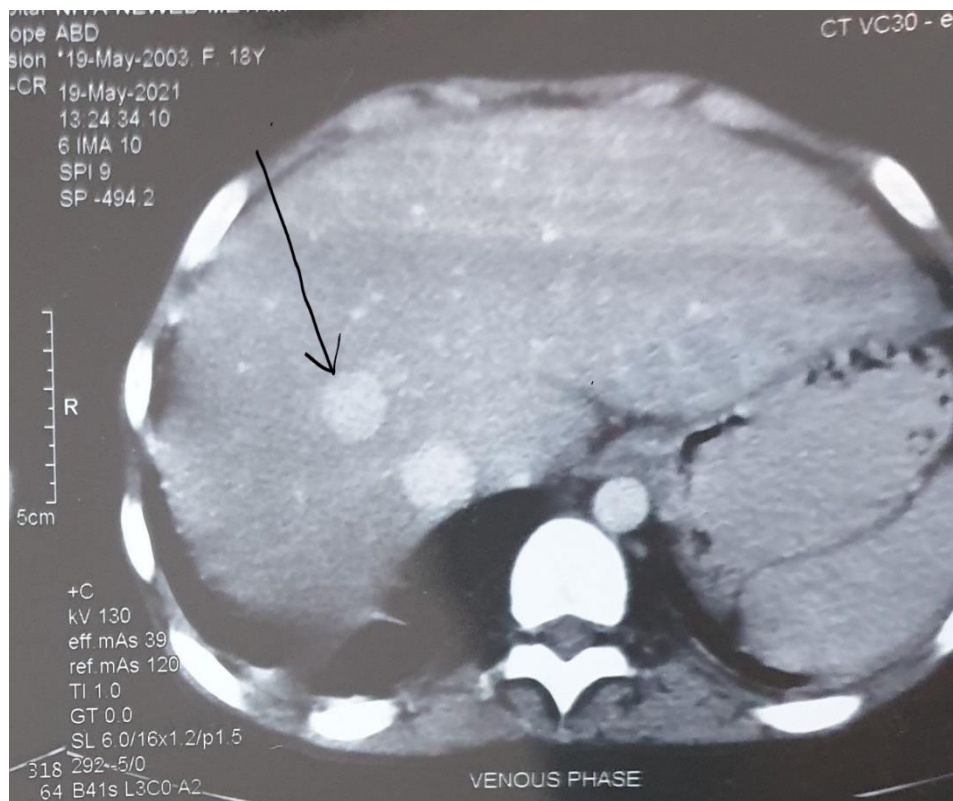
Figure 1: CT scan of the abdomen showing the pelvic mass



The surgical team was consulted to evaluate the patient for laparotomy and drainage of multiple abscesses.

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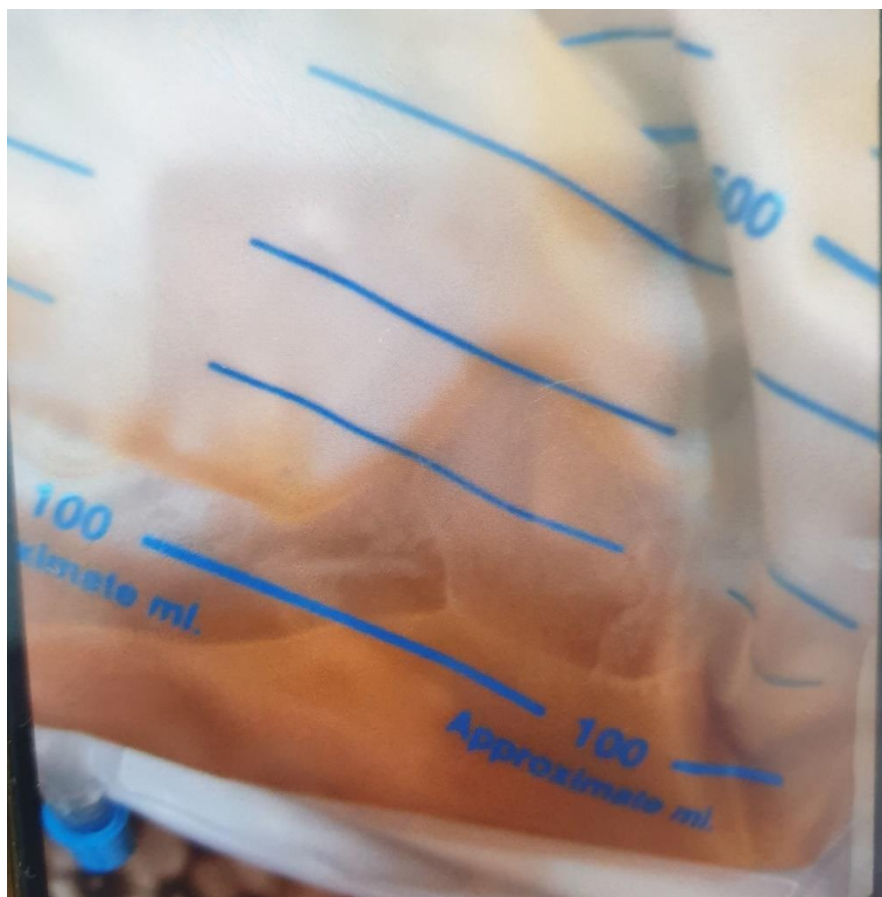
Figure 2: CT scan of the abdomen showing two hepatic masses



The consensus concluded that, considering the patient as anemic and on anti-coagulation, the pelvic abscess was first drained percutaneously

under ultrasound guidance. The patient drained around 3 liters of pus after which the drain was removed (Fig 3)

Figure 3: drain bag with purulent Tuberculous fluid



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Direct analysis and Ziel-Neelsen stain of the fluid and culture showed high concentration of Tuberculous Bacilli. The patient gave a history of contact with her father who had pulmonary tuberculosis three years earlier. Infectious control team started anti-tuberculous medications. Her medication was a daily USP tablet that includes a combination of Isoniazide 75 mg, Rifampicine 150 mg, Euthamputol 275 mg and Pyrazineamide 400 mg. The two hepatic abscesses were left without drainage. The inflammatory markers improved but she needed blood transfusion twice. To note, the regular dose of warfarin needed to keep her INR within therapeutic range was 2 mg. However, while using anti-TB medications she needed 13 mg of

warfarin to maintain the same INR ratio. One month after being on anti- TB medications, the patient had another fever and severe cystitis. Repeated abdominal ultrasonography showed recollection of the pelvic abscess. This time she underwent laparotomy and aggressive surgical drainage of the pelvic abscess and again the hepatic ones were left for medical therapy as their sizes were much less on repeated ultrasound. Her surgical scar took a longer time to heal (Figure 4) in spite of albumin supplementation. However, her constitutional symptoms, appetite, ascites, weight, and inflammatory markers improved gradually over a couple of months.

Figure 4: Surgical scar with delayed healing and a sinus



The only refractory parameter was the anemia; hemoglobin level was repeatedly around 7 mg/dl (normocytic hypochromic) even after repeated transfusions and iron and folic acid replacements. The first impression was anemia of chronic illness but detailed analysis after being refractory to therapy showed increased reticulocyte count of 2.8%, and high lactate dehydrogenase (LDH) of almost 600U/L. Para- valvular leak was then suspected in spite of repeated normal transthoracic echocardiography studies. Transoesophageal echocardiography confirmed a small para-valvular leak anteriorly but no abscess formation,

dehiscence, or rocking of the valve (Fig 5). The leak was different from the central jet and turbulence caused by the anemia and hyperdynamic circulation. We decided to continue on conservative therapy with anti-TB therapy especially after the repeated ultrasonography showed no more hepatic abscesses. After completing 6 months of therapy the patients' hemoglobin was 11.5g/dl and there was no more hemolysis by hematological values. Her reticulocyte counts and LDH became normal and there was no more para-valvular leak. The patient then developed symptoms, signs and echocardiography parameters

of constrictive pericarditis. This was treated with prednisolone 1 mg/kg and tapered off over a 3-month period with dramatic response. The infectious disease team based on multiple sites of infection decided to continue treatment for another 6 months for a total of 12 months of anti TB medications in spite of her ESR being normal at 5. The patient is now doing well, free of symptoms, and has gained 10 kilograms of weight.

Figure 5: TEE para-valvular leak



Figure 5 TEE para-valvular leak final compressed.mp4

## Discussion:

Tuberculosis is one of the leading 10 causes of death in the world, low and middle income countries are affected the most<sup>1</sup>.

Prosthetic valve endocarditis is rare with an incidence of 0.3-1.2 per year. The causative organism is mostly staphylococci in the first two years of surgery<sup>2</sup>.

Mycobacterium tuberculosis native valvular endocarditis is very rare, usually occurs as part of miliary TB and is mostly diagnosed in post-mortem biopsies<sup>3</sup>. The case is similar in tuberculous prosthetic valve infection, however cases due to contaminated infected prosthetic homograft and water used in cardioplegia are reported<sup>4</sup>.

Cardiac TB was described in 1826 by Laennec<sup>5</sup> who stated that the heart is, by order of frequency, the organ number 13 to be affected by TB. Cardiovascular structures affected by TB are the pericardium, the endocardium and the Aorta<sup>6,7,8</sup> with the pericardium being the most common especially in HIV patients<sup>9</sup>. Pericardial involvement can be in the form of constrictive pericarditis, myopericarditis or pericardial effusion<sup>10</sup>.

Myocardium affection is mainly by hematogenous spread and rarely by retrograde lymphatic spread from mediastinal lymph nodes<sup>11</sup>. Late, after one

year, prosthetic valve infection usually occurs from transient bacteremia occurring in a distant site<sup>12</sup>.

We report here a case of a huge TB pelvic abscess, multiple hepatic abscesses, and para-valvular leak with tuberculous valvular endocarditis in a mechanical mitral valve prosthesis in an immunocompetent 16-year old girl.

Only the pelvic abscess needed surgical drainage. The hepatic and cardiac lesions responded very well to anti-tuberculous medications which makes this case unique and highlights the possibility and success of prolonged medical therapy alone in cases of uncomplicated small TB para-valvular leak. After complete healing of the leak, control of anemia and settlement of all infectious parameters, the patient showed signs, symptoms and echocardiography parameters of constrictive pericarditis that responded very well to high doses of prednisolone over 3 months period. Although we are not discussing this in details, but it strengthens the fact of the TB cardiac involvement especially in the absence of a tissue diagnosis.

Hepatic TB is rare and it can manifest as single or multiple abscesses usually in an immunocompromised patient<sup>13</sup>. Our patient was a healthy immunocompetent young girl but still she had multi-system TB infection.

Pulmonary TB is the most common site but genitourinary TB is increasing especially in immunodeficient patients. The commonest site is the fallopian tube followed by the endometrium and the ovaries<sup>14</sup>. Reported cases of genital or pelvic TB are treated medically first. Surgery is needed based on the size, symptoms, and the response to treatment<sup>15</sup>. In our case the first subcutaneous drainage of the pelvic abscess did not work in spite of anti TB medications coverage, so we proceeded to the classical surgical drainage. Hemolytic anemia is a well-known complication of para-valvular leak. This can occur early due to surgical technique or late due to endocarditis. The

size of the leak does not correspond to the degree of the anemia<sup>16</sup>. Parameters are low HB, elevated LDH (> 460 U/L), and high reticulocyte count (>2%). In this case report, the para-valvular leak was small without any rocking or dehiscence of the valve nor the presence of vegetation. However, the high jet velocity at the para-valvular leak caused severe hemolytic anemia resistant to treatment and needing multiple transfusions. The hemolysis stopped after control of the TB infection and healing of the leak.

Delayed wound healing is significantly noticed in this case. The scar for pelvic abscess drainage had a persistent sinus that took almost 2 months to close. This is compared to the very normal healing of the primary chest incision for valve replacement that healed within a week. One of the probable reasons is the low albumin and anemia despite replacement of albumin and repeated blood transfusions. TB itself is well reported to cause delayed healing<sup>17</sup>.

The Warfarin-Rifampicin interaction in this case report needed special attention. Rifampicin is a cytochrome P450 inducer and the interaction with warfarin may be disastrous<sup>18</sup>. Our patient's regular dose of warfarin prior to the use of Rifampicin was 2 mg to reach a target INR of around 2.5. With Rifampicin, she needed 13 mg of warfarin to maintain the same INR. This was very challenging in the presence of a mechanical mitral valve prosthesis, anemia needing multiple transfusions, anti TB medications, and antibiotics for surgical coverage.

## Conclusion:

This case opens a window for research that small un-complicated tuberculous para-valvular leak can be treated conservatively with prolonged anti-TB medications without the need for surgery. It also highlights the importance of performing Transoesophageal echocardiography in studying prosthetic valves in the presence of hemolytic or

refractory anemia to detect lesions missed by transthoracic echocardiography. The hepatic abscess as well showed complete healing unlike the pelvic abscess with the harder capsule that needed aggressive surgical drainage.

## Conflict of Interest:

None.

## Funding Statement:

None.

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Dr. Khalda Ahmed Khalid, Internal Medicine and Pulmonologist, National Ribat University, Ribat University Hospital

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Dina Yousif, National University

## Patient consent statement:

In compliance with COPE guidelines, the patient and family has no objection for the case to be published. This includes the patient case history as well as processing of data, images and clips.

## Data Availability statement:

Data available within the article or its supplementary materials. Further data available on request from the Authors.

## Authors' contribution:

Author \*1 is the corresponding author and the primary physician of the patient. She was directly involved in the patient medical care, investigations, treatment and follow up. She wrote the manuscript including the case history, the discussion and the references and submitted the case for publication  
Co Author \*2 reviewed and revised the case report and the references

Co Author \*3 is the surgeon who performed the surgical drainage of the pelvic abscess and followed the delayed healing of the skin wound. He contributed to the layout of the case report.

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Dr. Khalda Ahmmed Khalid is the Pulmonologist who prescribed and followed up the anti-TB medications, and decided the duration of treatment. She agreed on the manuscript idea and finalization.

Ahmed Mutaz yousif prepared the figures, clips and helped in the submission.

Dina Yousif helped in language and editing.

## Abbreviations:

TTE: transthoracic echocardiography

TEE: Transoesophageal echocardiography

TB: Tuberculosis

RHD: Rheumatic heart disease

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