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CASE REPORT

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Melioidosis misdiagnosed as Tuberculous pericardial effusion: A case report

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Abstract

Melioidosis is an infection caused by the bacterium *Burkholderia pseudomallei*, a gram-negative bacterium. It is an endemic disease in Malaysia, Thailand, northern Australia, and Singapore. Due to the lack of pathognomonic clinical symptoms and the capacity to mimic clinical features of other diseases such as cancer or tuberculosis, melioidosis has been dubbed "the Great Imitator." In this report, A 63 year old Malaysian male presented to the ED with S.O.B. for two weeks and was primarily treated for pulmonary tuberculosis. After being discharged, his C/S result showed the presence of *Burkholderia pseudomallei* spp. in the pericardial fluid. A final diagnosis of Melioidosis was established, patient was re-admitted and put on Ceftazidime, Fortum, and oral Bactrim. Rare causes of purulent pericardial effusion should be ruled out, particularly in endemic areas, and patients presenting to the ED are better to be monitored and not to be discharged until C/S results are obtained.

Keywords: Melioidosis, Pericardial effusion, Echocardiography.

INTRODUCTION

Melioidosis is a potentially fatal infection caused by the bacterium *Burkholderia pseudomallei* which is a gram-negative bacterium [1-3]. In northeast Thailand, northern Australia, Singapore, and portions of Malaysia, melioidosis is regarded as particularly endemic [4]. Melioidosis is difficult to diagnose clinically because there are no pathognomonic clinical symptoms, and the organism is frequently misinterpreted by procedures employed in clinical laboratories [1]. Due to the lack of a pathognomonic clinical symptom and the capacity to mimic clinical features of other diseases such as cancer or tuberculosis, melioidosis has been dubbed "the Great Imitator" [5]. In this article, we report a case of pericardial effusion due to the infection of *B. pseudomallei* in an elderly Malaysian male patient who presented with respiratory symptoms and have no past history of melioidosis.

CASE REPORT

A 63-year-old male presented to the ED with S.O.B. for two weeks associated with reduced effort tolerance, cough, pleuritic chest pain, loss of appetite, night sweats, and loss of weight of about 7 kg. In the ED, the patient was given npO2 of 3l/min. On bedside, echo revealed pericardial effusion of 1.8cm and underwent pericardiocentesis; 300 ml of serous fluid was drained and sent for culture and sensitivity (C/S). A provisional diagnosis of pericardial effusion secondary to TB was made (TPE). Accordingly, a regimen for TB treatment was described: Rifampicin; Pyrazinamide; Isoniazid; Ithambutol; Pyroxidine, in addition to Tazocin; Azithromycin; and Prednisolone; (See treatment section). The patient was discharged in good condition and had normal vital signs (Pulse 88/min; BP 120/60; Hb 11g/dl; TWBCs 12.960/ml; normal electrolytes and Urea, normal plasma proteins). The C/S result showed the presence of *Burkholderia pseudomallei* spp. in the pericardial fluid. A final diagnosis of Melidosis was established, and the patient was re-admitted and put on: Ceftazidime; Fortum; and Bactrim (See the treatment section).

Investigations

On ED:

- Blood sample results were as follows: Hemoglobin 11g/dl; TWBCs 12960/ml; Na+133mmol/l; K+4.3mmol/l; Urea 3.7mmol/l; Creatinine 56mmol/l; Ca++ 1.97 mmol/l, Albumin 27g/l; Globulin 37mg/l; AST 70; ALT 40; ALP 385;
- Pericardial fluid analysis: Proteins 58g/l, Glucose, LDH 1250 u/l, CK 607 u/l

- Echocardiography result: Ejection fraction 55%; 0.7 cm of pericardial effusion was detected; grade II diastolic dysfunction; no RWMA.

After re-admission:

- Blood results were as follows: Hemoglobin 11.4g/dl; TWBCs 14550/ml; ESR 90 mm/hr., CRP was positive (>200mg/l).

- C/S for pericardial fluid: *Burkholderia pseudomallei* isolated; Pus cells 25/hpf; No epithelial cells.

Imaging:

X-ray: see figure 1.

Echocardiography: see figure 2.

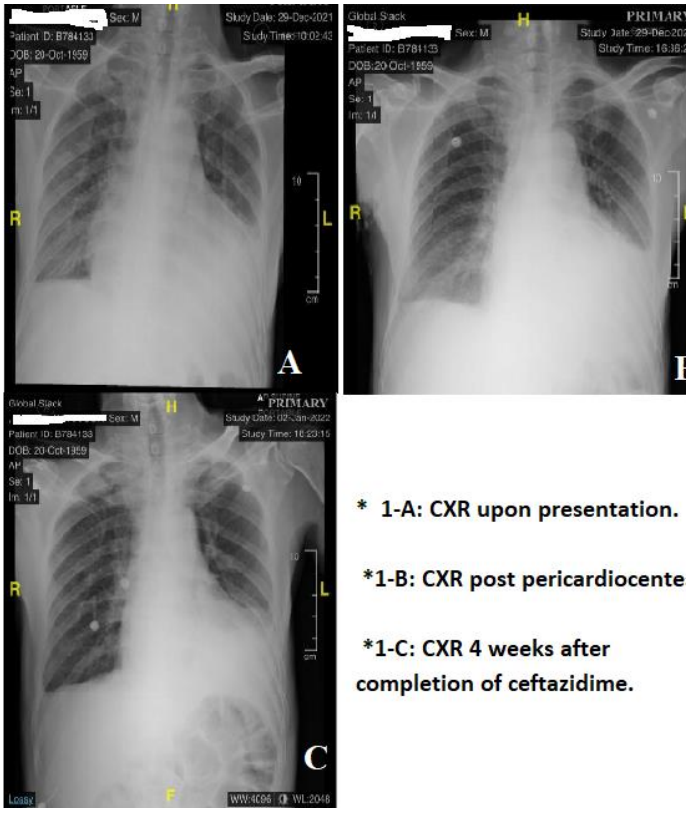

Figure 1: Chest X-ray of the patient. A: upon presentation, B-after pericardiocentesis, and C: one months after completion of antibiotics

Treatment

The patient was put on Ceftazidime I.V 0.75 g TDS, Fortum I.V 0.75 g TDS, and continued on Bactrim 0.75 g oral.

Differential diagnosis

Given the patient's presentation, age, clinical probabilities, and interpretation of echocardiography, the first provisional diagnosis was pulmonary tuberculosis, complicated with tuberculous pericardial effusion. Other than TPE it could be purulent pericardial effusion (PPE) due to other types of bacteria (Strep. Spp., Staphylococci, or Pneumococci), neoplastic pericardial effusion (NPE), or idiopathic pericardial effusion (IPE). Uremic pericardial effusion (UPE), post rheumatic fever pericardial effusion (PRPE), or post Myocardial infarction pericardial effusion (PMPE) was also possible, but there was no previous history of renal disease, rheumatic fever, or MI to support these differential diagnoses.

Outcome and follow-up

- Lab results after 5 days were improving: Hemoglobin was 9.9 g/dl; TWBCs decreased to 6.970/ml; ESR 90 mm/hr., CRP decreased to (40mg/l).

- Blood C/S was negative.

- All TB investigations were negative.

- The patient was in a good condition and symptoms resolved.

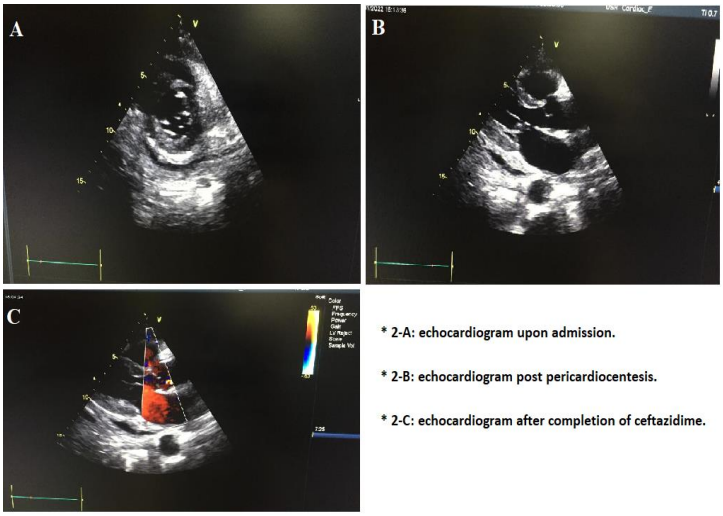

Figure 2: Echocardiography performed to the patient. A: upon presentation, B: after pericardiocentesis, and C: one months after completion of antibiotics

DISCUSSION

B. pseudomallei is a Gram-negative soil saprophyte that causes the disease melioidosis [6]. Melioidosis is a disease that affects both humans and animals, causing a variety of symptoms such as asymptomatic infection, localized skin ulcers, abscesses, chronic pneumonia that mimics tuberculosis, and fulminant septic shock [7]. Meliodosis is a serious health problem since it's simple to misdiagnose because of the vague, non-specific symptoms, and it has a high fatality rate [8]. The incubation period varies between one day and three weeks, 9 days being the mean [9]. The infection despite being rare had many associations and risk factors; a 2007 review by Cheng and Currie [10] listed the major risk factors that have been found in melioidosis cases which are: Male gender, Diabetes mellitus, Excessive alcohol consumption, Chronic lung disease, Mycobacterial disease, renal disease or transplant, past medical history of Splenectomy, exposure to the bacteria from soil or water, exposure steroid. Some rare diseases were associated with melioidosis, particularly aplastic anemia, febrile neutropenia, thalassemia, chronic granulomatous disease, SLE, G-6-PD deficiency, neutropenia, Dengue hemorrhagic fever, hemosiderosis, cystic fibrosis, and porphyria cutanea tarda all were found pre-existing in patients melioidosis [10]. The presence of pre-existing heart disease was also reported to be a risk factor for melidosis by Sarovich et al. in 2014 [11]. B. pseudomallei

mainly targets the respiratory system hence most of the infections are found in the chest; a 20-year prospective study held in Australia concluded that half the patients are admitted due to chest infection, genitourinary and skin infection was noted in 14%, and 13%, respectively, bacteremia without localization in 11%, septic arthritis or osteomyelitis in 4%, melioidosis of the nervous system cerebral abscess, meningoencephalitis, or myelitis) in only 3% [12].

Meliodosis-related cardiac involvement is said to be uncommon, with a frequency of less than 1% of all melioidosis cases [3]. According to a review published in 2020, there were 49 patients with pericarditis, 11 patients with endocarditis, and only three patients with myocarditis were reported in the literature [3]. One case was reported in 2015 confirmed the presence of endocarditis with a massive brain infarct [13].

In Malaysia, a case of B. pseudomallei causing pericardial effusion and complicated 12 months later with constrictive pericarditis was reported by Wong et al [2], and another case reported by Lu et al [6] was published, where the patient presented with large pericardial tamponade, and-despite the proper treatment, the patient developed recurrent pericardial effusion and right heart failure due to constrictive pericarditis. Both patients were healthy males of 38 years of age, which notifies that cardiac melioidosis could present at any age without associated health issues. In our current case report, the patient had no associated risk factors and the TB workup investigations were negative.

Learning points

- Rare causes of purulent pericardial effusion should be ruled out, particularly in endemic areas.

- According to the reported literature in East Asia, melioidosis could present at any age, and in previously healthy and immune-competent individuals.

- Long-term follow-up should be performed in cardiac melioidosis patients to avoid late complications such as constrictive pericarditis.

- Patients presenting to the ED are better to be monitored and not to be discharged until C/S results are obtained.

Data availability statement

Data is available and will be handled upon request.

Funding statement

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Conflict of interest disclosure

Both authors have no conflicts to declare.

Ethics approval statement

Approved by the internal medicine department.

Patient consent statement

Patient was consented.

Permission to reproduce material from other sources

Permission granted.

Clinical trial registration

Not needed.

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