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Case Report
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Melioidosis with Cardiac Tamponade - A Great Mimicker

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Abstract

Melioidosis and tuberculosis share a group of similar presentation and often mimicking each other. It has become a challenge for the treating physician in order to establish a correct diagnosis, especially in the place where both melioidosis and tuberculosis are endemic. Furthermore, melioidosis pericardial effusion is rare and it is not uncommon to miss the diagnosis. The only way to differentiate between these two diseases to obtain culture or histological biopsy. We would like to illustrate a case of melioidosis pericardial effusion who presented as cardiac tamponade, was initially treated empirically as tuberculosis pericarditis.

Keywords: Melioidosis; Cardiac tamponade; Tuberculosis; Pericarditis

Background

Melioidosis, also known as Whitmore's disease, is an infectious disease caused by a gram-negative bacillus named *Burkholderia pseudomallei*. Melioidosis is common in tropical climates especially in Southeast Asia as the bacterial can easily be detected in contaminated water and soil. Melioidosis can have various kinds of presentations from simple bacteremia to pneumonia, intraabdominal abscess such as liver or splenic abscess, neuromelioidosis, joints and bone infection. Rarely, it can present as pericarditis or pericardial effusion. According to Darwin study in Australia, there were only 4 out of 540 melioidosis cases presented as pericarditis, and 3 of them co-exist with pneumonia [1]. The diagnosis become more challenging in melioidosis and tuberculosis endemic area as both presentations could be almost similar and the only way to differentiate it is by pericardial fluid culture or histology biopsy [2]. We would like to report a rare presentation of melioidosis, with pericarditis and pericardial effusion, which initially empirically treated as tuberculosis pericarditis.

Case Presentation

A 49-year-old gentleman, presented with gradually worsening of dyspnea for 2 months, associated with orthopnea, reduced effort tolerance upon exertion and bilateral leg swelling. He also complained of intermittent low-grade fever for 2 weeks, associated with loss of appetite. There was no history of chronic productive cough or hemoptysis. On examination, his blood pressure was 100/83 mmHg, pulse rate was 130 beats per minute, respiratory rate was 24 breathes per minute and he was afebrile. He had a muffled heart sound with bilateral lung rales heard upon chest examination. His jugular venous pressure was raised, hence fulfilled the Beck's triad.

His initial full blood counts revealed leukocytosis 15 × 10^9 g/L, with mildly anemia with hemoglobin of 11.2 g/dL and a normal platelet count of 376 × 10^9 g/L. His renal function showed sodium 138 mmol/L, potassium 3.8 mmol/L, urea 8.8 mmol/L and creatinine 65.7 µmol/L. His liver function test was normal. He had elevated inflammatory markers with erythrocyte sedimentation rate of 104 mm/h and C-reactive protein of 136.5 mg/L. Chest radiograph showed an enlarged cardiac silhouette and electrocardiogram showed sinus tachycardia with low QRS voltage.

Bedside echocardiography showed global pericardial effusion with a maximum fluid collection of 4.8 cm. Right ventricle collapse was seen during diastolic stage. An urgent pericardiocentesis was done for and a pigtail catheter was inserted. A total 800 ml of straw color pericardial fluid aspirated out manually. His pericardial fluid biochemistry result showed protein level of 58 g/L and LDH of >3325 U/L. The pericardial fluid was negative on Ziehl-Neelsen stain and GeneXpert.

He had been treated empirically as tuberculous pericarditis in view of tuberculosis has high prevalence in Sabah, Malaysia. However, there was no clinical improvement and his pericardial fluid continuously flowed out through pigtail catheter. Few days later, his pericardial fluid culture came back as *Burkholderia pseudomallei* and he was treated with intravenous Ceftazidime 2 g 6

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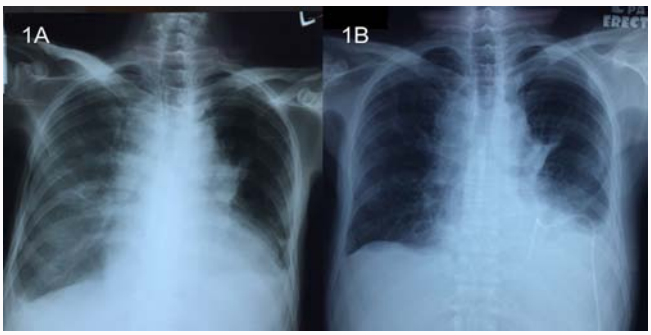

Figure 1: A) Chest radiograph showed enlarged cardiac silhouette. B) Chest radiograph showed post pericardiocentesis and pigtail catheter *in situ*.

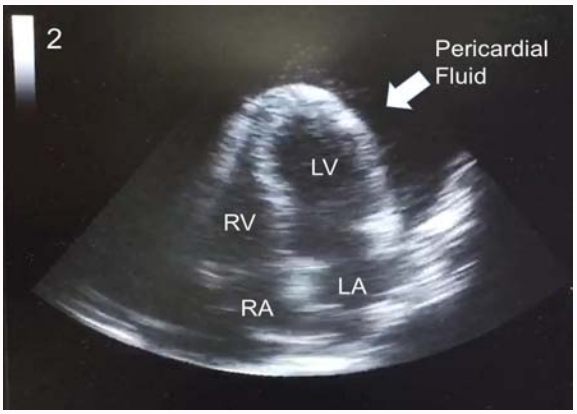

Figure 2: Echocardiogram showed massive pericardial effusion with right atrium and right ventricle collapsed. LV: Left Ventricle; LA: Left Atrium; RV: Right Ventricle; RA: Right Atrium

hourly. His blood culture did not grow any organism. His condition deteriorated gradually and despite optimal medical therapy provided, he developed septic shock with severe acute kidney injury and required intermittent hemodialysis. He progressed to multi-organ failure and eventually succumbed after 10 days of admission.

Discussion

The incubation period for melioidosis can be ranged from 1 to 21 days [3]. Previous literatures described the mode of melioidosis infection as inhalation. Now, percutaneous inoculation by exposure to contaminated soils or water during wet season in the endemic area has been known as the primary route of getting melioidosis [4]. The predisposing factors for melioidosis infection include diabetes mellitus, chronic alcohol user, renal disease, farmers who often expose themselves to the water and soil, and immunocompromised patients on chemotherapy or transplant patients.

Melioidosis is a great mimicker as it is difficult to be distinguished from other chronic bacterial infections such as tuberculosis. Majority of the melioidosis pericarditis share the similar features as tuberculosis pericarditis. These patients came with subacute to chronic presentations with moderate to massive pericardial effusion shown in echocardiogram. Risk factors for melioidosis, clinical presentation, chest radiography, electrocardiography and echocardiography are not helpful in distinguish these two diseases. As for pericardial fluid analysis, the cell counts and biochemical analysis do not provide any extra information to help in differentiating between melioidosis and tuberculosis pericarditis [5]. The only method to confirm the diagnosis of melioidosis is to isolate and identify the culprit organism, *Burkholderia pseudomallei* from the pericardial fluid culture. In contrast, a pericardial histology examination is helpful in diagnosis tuberculosis, as 60% of the patients will have a positive acid-fast bacillus staining and 86% of them will have granulomatous inflammation or caseous granulomatous [5]. Therefore, it is not uncommon for a physician to miss the diagnosis while the culture is still pending. There were only few cases of melioidosis with cardiac involvement had been reported in the literature and most commonly presented as pericarditis, followed by endocarditis and myocarditis [6]. Hence, there are many reported cardiac melioidosis where the patients were being treated as tuberculosis pericarditis initially [7]. In fact, most of the patents presented with pericardial effusion in places like India where tuberculosis has become an endemic in the country, will be treated with anti-tuberculous drugs empirically despite no evidence of acid-fast bacilli stain or culture negative for mycobacterium tuberculosis complex [7].

In our case, the correct diagnosis was only established few days after the pericardial fluid culture and sensitivity was released. The patient was treated empirically with anti-tuberculous drugs initially, together with corticosteroid. The delay of achieving diagnosis was mainly due to high prevalence of tuberculosis in the local setting. The atypical presentation in this patient which leads to delay diagnosis as well, because there was no clinical suspicion of melioidosis at the first place. Despite appropriate treatment initiated and optimal medical therapy given, patient's condition did not improve and was deteriorated. According to Chung et al. melioidosis with cardiac involvement can carry about 20% to 60% of the mortality rate [8]. Treatment of melioidosis will be using broad spectrum antibiotic such as Ceftazidime or Meropenam and it should be continued for 2 to 4 weeks in the intensive phase, followed by trimethoprim/sulfamethoxazole or doxycycline for 20 weeks as eradication phase [9]. Early treatment can reduce the mortality rate and improve the prognosis.

Conclusion

Melioidosis pericarditis is extremely rare. Melioidosis should always be considered as one of the differential diagnoses, apart from tuberculosis, especially in the tropical climate area. It is important to establish the correct diagnosis as the treatment for melioidosis and tuberculosis is totally different. Tuberculosis should be ruled out before initiating antituberculosis drugs as this can help to avoid unnecessary treatment which might put patient at risk of getting side effects from these drugs.

Consent

The authors certify that they have obtained all appropriate patients' consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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