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RIGHT-SIDED INFECTIVE ENDOCARDITIS MASQUERADING AS PULMONARY TUBERCULOSIS: A CASE REPORT

Azwanis Binti Abdul Hadi[1], Khairun'naim Bin Khairuddin[1&2]*, Mohd Nizamuddin Bin Ismail[2]

[1]Department of Family Medicine, Kulliyyah of Medicine, International Islamic University Malaysia

[2]Department of Community and Family Medicine, Faculty of Medical and Health Faculty, University Malaysia

Corresponding Author's Email: khairunn8310@ums.edu.my

ABSTRACT

Right-sided infective endocarditis is not as common as left-sided infective endocarditis. The clinical signs and symptoms of right-sided infective endocarditis are subtle, making clinical detection more complex and easily leads to misdiagnosis. We present a case of mild haemoptysis as a presentation of right-sided infective endocarditis but was initially misdiagnosed as pulmonary tuberculosis, which led to a delay in treatment. The patient had multiple visits to the health facilities (private clinic, government's health clinic and hospital) and one admission to the hospital for recurrent cough, fever, and haemoptysis without any improvement. Later, he was diagnosed with right-sided infective endocarditis and was well after treatment. Delays in treatment can lead to an increased risk of permanent morbidity to the patient. This case report highlights the importance of a high index of suspicion and exploring other differential diagnoses of haemoptysis apart from pulmonary tuberculosis.

Keywords: Endocarditis, Haemoptysis, Pulmonary, Tuberculosis

INTRODUCTION

Right-sided infective endocarditis is rare and with clinical presentation similar to a respiratory infection, which makes it often misdiagnosed. Delayed correct diagnosis and treatment could lead to severe complications. We present a case of patient with right side infective endocarditis initially misdiagnosed as pulmonary tuberculosis, who showed improvement once he was diagnosed and properly treated.

CASE PRESENTATION

This is a case of a 36-year-old man who had multiple visits to the health facilities (private clinic, government's health clinic and hospital) for recurrent cough, fever, and haemoptysis for two months. A month after the onset of haemoptysis, he was admitted to the hospital and was treated as pneumonia and for pulmonary tuberculosis investigation. He was given

tuberculosis and lung malignancies was done. The investigations including sputum AFB, MTB C&S and Mantoux test came back negative. Chest x-ray (CXR) showed mild consolidation at the perihilar area which led to the diagnosis of pneumonia. The haemoptysis resolved upon completion of antibiotic.

However, he presented to a government health clinic with cough and haemoptysis which re-occurred one week after he was discharged. The cough was productive of whitish sputum mixed with streaks of blood. There was no history of massive haemoptysis. It was also accompanied with pleuritic chest pain during coughing, on and off fever, loss of weight (LOW) and loss of appetite (LOA). He had no shortness of breath, nausea, vomiting or change in bowel habits. He denied any tuberculosis contacts. He worked as a labourer at a wood factory. Upon deeper questioning, he admitted that he was an intravenous drug user and claimed his last injection was over a year ago.

During physical examination, he had a high-grade fever with active minimal haemoptysis. On auscultation of the lungs, mild crepitation at bilateral lower zone was heard. No stigmata of infective endocarditis were elicited. His chest x-ray (CXR) showed interstitial infiltrates bilaterally more towards lower zone and with haziness at right upper zone. He was referred to the hospital for admission.

In the ward, sputum AFB x 3, sputum C&S, sputum MTB C&S and Mantoux test was done. All investigations came back negative ruling out pulmonary tuberculosis. Blood C&S from 3 sites grew staphylococcus aureus and was repeated every 48 hours until it came back negative. His haemoglobin dropped to 7.3 from 10 (at admission) due to the active haemoptysis. The level of haemoglobin improved after treatment without transfusion. Echocardiogram shows tricuspid regurgitation with vegetation size of 1cm.

Patient was started on intravenous ceftriaxone to cover for infective endocarditis and pneumonia. The antibiotic was later changed to intravenous cloxacillin following the Malaysian CPG of infective endocarditis after the definitive diagnosis of infective endocarditis was made. Patient was treated with intravenous cloxacillin for 4 weeks and a repeated echocardiogram showed the vegetation size reduced to 0.5 cm. The antibiotic was then continued for another two weeks. Echocardiogram before discharge showed no more vegetation. Patient's haemoptysis resolved after 4 days of antibiotic. Patient was not given any transfusion and his haemoglobin recovered to 14.4g/dl at 4th week of antibiotic. Patient was discharged well and was seen 2 weeks later for follow up. Patient did not have any complaint and was planned to repeat echocardiogram after 3 months.

DISCUSSION

Infective endocarditis is an infection of the endocardial surface of the heart. In general, it is difficult for the heart to get infected because it is difficult for organisms to adhere the endocardium tissue due its nature and because of the turbulen (Sexton & Chu, 2019 and John, 2017). However, infective endocarditis happens when there is structural abnormality in the endocardium with concurrent bacteraemia.

Left sided infective endocarditis is more common than the right side. This is because it is more common to have congenital and acquired abnormalities at the left side as compared to the right. The turbulent blood flow across the aortic and mitral valve predisposes these valves to damage and the blood at the left side of the heart is also higher in oxygen necessary for some bacteria to survive (Sexton & Chu, 2019).

Right sided infective endocarditis is rarer with only 5-10% occurrence rate (Sexton & Chu, 2019 and Revilla *et al*., 2008). The most common predisposing factor for right sided infective endocarditis is Intravenous Drug Use (IVDU) which makes up 70% of right sided infective endocarditis occurrence (Sexton & Chu, 2019; Revilla *et al*., 2008 and Palepu *et al*., 2004). There are many aetiologies of how IVDU can cause infective endocarditis. The most common is that IVDU can cause structural damage. This is due to the particulate matter in the injected drugs which is carried in the bloodstream that can cause damage to the heart valves, especially the tricuspid valves (Sexton & Chu, 2019). Tricuspid valve is the most common valve that can get infected with 40-69% of the time as compared to the pulmonary valve. This is because the tricuspid valve is the first valve that receives the particulate material in the injected drugs. Because of the injury to the intima it will cause thrombus formation of platelets and fibrin which predisposes to bacterial aggregation leading to vegetation (Sexton & Chu, 2019).

Left sided infective endocarditis is usually suspected when a patient presents with fever and a new murmur. But right sided infective endocarditis presents with a diagnostic difficulty, because right sided infective endocarditis does not usually present with murmurs which is seen in this case (Sexton & Chu, 2019) . Only one third of patients have murmurs. Right sided infective endocarditis usually presents with fever (up to 90% of patients), and other non-specific features such as chills, anorexia, weight loss, malaise, headache, myalgias, arthralgias, night sweats, abdominal pain, and dyspnoea (Sexton & Chu, 2019 and Revilla *et al*., 2008). However, majority (up to 75%) of patients with right sided infective endocarditis presents with septic pulmonary emboli (Chahoud *et al*., 2016) with symptoms of cough and haemoptysis. Because of this it is common to inaccurately diagnose right sided IE initially as respiratory tract infection,

or pulmonary TB such as in this case. The chest x-ray of patients with right side infective endocarditis with septic emboli manifests as pulmonary infiltrates with central cavitation that is more prone to the bases and peripheries of the lungs. This radiographic feature appears in more than half of right sided IE cases (Palepu *et al.*, 2004), and is similarly seen in this case.

Because of this too that right sided IE are often diagnosed late. Late detection could arise to many complications such as pulmonary infarcts, pulmonary abscesses, pleural effusion, empyema, and, rarely, pneumothorax. Other delayed presentation such as right heart failure, right atrial dilatation, supraventricular arrythmias and mycotic aneurysm (Sexton & Chu, 2019 and Aguado, Arjona, & Ugarte, 1990). Mortality rate is 6% but vegetation size more than 2 cm and fungal aetiology increases mortality. Vegetation size more than 1 cm could lead to congestive heart failure.

Peripheral embolization such as petechiae, splinter haemorrhages and Osler's nodes is not common in right sided infective endocarditis but can happen with staph aureus infection, at sites such as the brain, eye, spleen, kidney, eye, and spine (Sexton & Chu, 2019 and John 2017).

The diagnosis of right sided infective endocarditis must be based on clinical criteria, blood cultures and echocardiography. The modified Duke's criteria is the most accepted and widely used criteria to diagnose infective endocarditis and there are evidence that this criteria is suitable to be used to diagnose right side IE (Palepu *et al.*, 2004). This patient fulfilled 2 major criteria and 2 minor criteria of diagnosing IE which was blood culture positive for IE: evidence of endocardial involvement; history of intravenous drug use and fever: temperature > 38°C.

It is important to note that the modified Duke criteria is to be used as a guide, and it is advisable for clinicians to investigate further in possible IE cases with high index of suspicion (Ministry of Health, 2017).

CONCLUSION

This case highlights the difficulty in suspecting right sided infective endocarditis due to its respiratory presentation and lack in classical infective endocarditis features such as heart murmurs and peripheral signs. This difficulty is further compounded in a patient who presents with haemoptysis in a pulmonary tuberculosis endemic area. Therefore, it is important for primary care doctors to take an in-depth history with the aim of considering other possible causes of haemoptysis, with right sided infective endocarditis as one of the causes of haemoptysis in a patient with history of intravenous drug use.

Conflict of interest

The authors declare that they have no competing interests in writing this article.

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How does this paper make a difference to general practice?

1. The importance of differential diagnoses. Even though pulmonary tuberculosis is endemic in this region, a differential diagnosis of other causes of haemoptysis must be thought of.
2. The importance of social history. A thorough history taking especially social history may be the only clue towards a correct diagnosis.
3. High index of suspicion of other diagnosis especially in recurrent negative sputum AFB and atypical chest x-ray findings.
4. Right side infective endocarditis non typical presentation makes it one of the lesser-known masquerades of respiratory infections.

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