Case report

Brucella prosthetic valve endocarditis with septic and cardiogenic shock

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A B S T R A C T

A young man with aortic prosthetic valve replacement, presented with prolonged fever and diagnosed with brucella endocarditis based on positive transthoracic echo findings with high titer positive brucellacap serology. He was started on medical treatment with doxycycline and rifampin to which gentamicin and ceftriaxone were added and he was planned for surgical intervention. Unfortunately, the patient developed cardiogenic with septic shock before performing surgery and died within 24 h soon after admission.

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Case presentation

We report a case of young man diagnosed with brucella prosthetic aortic valve endocarditis. A 37-year-old patient admitted initially in another medical center for history of fever of 3 months’ duration with night sweats and generalized fatigue. Patient reported raw milk intake. A diagnosis of brucellosis was made based on serology and he was started on doxycycline with rifampin. But no major improvement was noted after 2 weeks of treatment. The family transferred the patient to our hospital for continuity of care. Patient had persistent fever, and shortness of breath even at rest. He was found to be tachypneic, saturating 88% on room air, tachycardic, and hypotensive. There was no urinary output. His past surgical history included an aortic valve replacement with mechanical valve implantation 20 years ago. An urgent transthoracic echo showed a total mechanical aortic prosthesis dehiscence with 4/4 para-valvular regurgitation, abscess in the aortic valve, with low ejection fraction (34%) and moderate to severe pulmonary hypertension (Figs. 1 and 2). BNP was 2202 pg/ml, troponin was 0.8 ng/ml. He was diagnosed with aortic prosthetic valve endocarditis. Six sets of Blood cultures as well Multiplex blood PCR were taken to increase the yield of getting positive result. Brucellacap titer was ordered. Patient was admitted to the CCU department and started on empiric treatment with Ceftriaxone 2 g IV OD, Gentamicin 1 mg /KG IV q 8 h, Doxycycline 100 mg PO q 12 h and Rifampin 300 mg 3 tablets PO daily pending all studies results. Diuretics and vasopressors were added to his medical regimen. Cardiothoracic surgeon was informed. The condition of the patient rapidly deteriorated within 24 h of admission. Patient was intubated, there was no response to high dose vasopressors. Lactate level reached 87.7 mg/dl. Procalcitonin value was 0.95 ng/mL. His laboratory test showed severe liver failure and renal failure that required hemodialysis. An aortic valve replacement was not performed that day due to the difficulty of maintaining a stable blood pressure. The patient died within 48 h of admission. Later on, Brucellacap test showed a positive result test at 1/2560 l/mL. Multiplex blood PCR tests and cultures results turn out to be negative. The final adopted diagnosis was a septic and cardiogenic shock due to a prosthetic endocarditis by Brucella sp.

Discussion

Brucellosis is a zoonotic infection acquired after consuming unpasteurized milk or cheese [1]. It is common in the middle east region with 10 of thousands of new cases happening annually [2]. In Lebanon, Brucella has an incidence of 3.5 and 9 cases per 100,000 inhabitants with highest percentage in Bekaa [3] where the patient lived. Brucella endocarditis is a rare disease (2%–5% [1] affecting native, congenital, or prosthetic valve and associated with high mortality in 80% of cases [1–4]. Brucella endocarditis on prosthetic...
brucella abortus and brucella melitensis are the most frequent involved species in brucella endocarditis [4]. We could not know the species of brucella involving our patient’s valve, since he was on anti-brucella therapy for 2 weeks prior to presentation which led to negative blood culture [4]. But his serology was very high (1/2560) in the setting of positive severe aortic valvular regurgitation and dehiscent valve, making acute brucella endocarditis more likely. In addition, the low blood culture incidence is justified because of the intracellular location of brucella with the fastidious nature of this organism as well the previous use of antibiotics [10]. Vegetations are present on echocardiography [4]. Complications of brucella endocarditis includes: cusp perforation, rupture chorda tendina, and detached leaflet [1], myocardial abscesses, disseminated intravascular coagulation, embolic phenomena (eg myotic aneurysms transient ischemic attacks, organ infarctions) and Congestive heart failure with the latter being responsible for the majority of death in patient with brucella endocarditis [1,4] like what happened with our patient. Ring abscess with valve detachment occurs most of the time with prosthetic valve infection. This infection can extend to surrounding myocardium and can cause AV block [11].

Due to rarity of brucella endocarditis incidence, treatment depends on case series and not on specified guidelines. This includes antimicrobial combined to surgical intervention [1,4] especially if severe aortic regurgitation from damaged valve cause congestive heart failure [1]. Brucella endocarditis tend to have tissue ulceration causing severe valve injury with large vegetation making medical therapy alone insufficient [9]. Antibiotics should be bactericidal and have intracellular level [12]. The 5 patients of the Raji’s series were treated with triple antibiotic therapy (gentamicin, doxycycline and rifampin) [4]. Other combination regimens include ceftriaxone with streptomycin and rifampin [13]. Duration of therapy is variable. In the series of Alsoub et al., patient received treatment from 10 to 20 weeks [6].

Conclusion

Even if Coxiella Burnetii and Bartonella represent the most common cause of fastidious germ related Blood culture negative endocarditis (BNCE) [14], brucella should be considered in the differential diagnosis of this entity, especially in a young patient with prosthetic valve and living in endemic area such as middle east where the prevalence of brucella in dairy product is 29% [15]; because earlier diagnosis and treatment lead to decreasing morbidity and mortality related to this infection.

Author contribution

Amal Hamieh:
She worked on discussion part, references, reviewing over all the manuscript, and then submitting the manuscript
Mohamad Hamieh:
He worked on writing the case details of the patient as well providing pictures and reviewing over all the manuscript

Informed consent

Written informed consent was obtained from a next of kin of the patient for publication of this case report and accompanying images.

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Declaration of Competing Interest

The authors declare that there is no conflict of interests associated with this work or any financial support for it that may have influenced its outcome.

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