Infective endocarditis is a potential differential diagnosis of systemic lupus erythematosus: case report

Basma E, Hatem AF

Tripoli University Hospital, Tripoli, Libya

Corresponding author:
Dr Basma Elhabbash, Tripoli University, Tripoli Medical Center, Tripoli, Libya. Email: Basma_alhabbash 2000@yahoo.com

Abstract

Background: Systemic Lupus Erythematosus (SLE) is multisystemic autoimmune chronic inflammatory disease. It has a relapsing remitting course. Here, we present a male patient with SLE who presented with signs and symptoms mimicking sub-acute infective endocarditis.

Case report: A 28 year old male presented with fatigue, fever, arthritis, and anaemia. He had past history of oral ulcers. Antinuclear antibody ANA was positive. Diagnosis of SLE depending on 2012 SLICC SLE criteria[1] was done and methylprednisolone IV pulse therapy was given for 3 days. On the 4th day he developed chest pain for which echocardiography was done and showed vegetation. Because of suspicion of infective endocarditis IE which cannot be excluded at that time, IV antibiotics were started. Blood culture was negative, it can be negative in 2% to 40% of IE patients, so antibiotics were continued for 4 weeks. Echocardiography repeated at the end of 4th week revealed no vegetation. The patient was discharged and was asked to come back for follow up and to repeat ANA and anti-dsDNA antibodies. At the 5th week, the patient came with active arthritis, fatigue, discoid rash and vasculitic body rash. ANA was repeated and found to be highly positive 1:10240. A final diagnosis was SLE associated with Libman Sacks endocarditis.

Conclusion: Infective endocarditis shared a lot of signs and symptoms of SLE. Antinuclear antibodies are also positive in infective endocarditis and this makes some diagnostic difficulties.

Key words: Systemic lupus erythematosus, Libman Sacks endocarditis, Infective endocarditis

Introduction

Systemic Lupus Erythematosus (SLE) is multisystemic autoimmune chronic inflammatory disease. It has a relapsing remitting course. Symptoms vary between people and may be mild to severe[2]. Common symptoms include painful and swollen joints, fever, chest pain, hair loss, mouth ulcers, swollen lymph nodes, feeling tired and a red rash which is most commonly on the face[2].

Infective Endocarditis (IE) is infection of the endocardium, usually with bacteria (commonly streptococci) or fungi. Common signs and symptoms include fever, heart murmurs, petechiae, anemia, embolic phenomena, and endocardial vegetations. The Duke diagnostic criteria, developed by Durack and colleagues[3], are generally used to make a definitive diagnosis of IE.

Here, we present a male patient with SLE who presented with signs and symptoms mimicking sub-acute infective endocarditis.

Case report

A 28 year old black man from south of Libya presented to rheumatology out patients clinic complaining of general weakness, fatigue, fever, and arthralgia for the last two months. He had past history of recurrent mouth ulcers. Clinically he was pale and febrile (temp. 39.5°C). He had rounded hypopigmented lesion on scalp behind the left ear and small vasculitic rash on the upper chest. He had both wrist joints arthritis. Heart examination revealed systolic murmur at the mitral area. Investigation showed haemoglobin of 8.7 g/dl, ESR was 85 mm/hr, coomb's test was negative. ANA which was done by ELISA test in local laboratory was positive. So, a diagnosis of SLE depending on 2012 SLICC SLE criteria[1] was done and IV methylpredisolone pulse therapy 1gm daily for 3 days was given.

On the 4th day, he presented for follow up, he showed signs of improvement, no more fever, no active arthritis. But he had sharp chest pain, echocardiography was requested which showed heterogeneous echo density, irregular border partially mobile vegetation started from sino tubular junction to ascending aorta which was confirmed by transesophageal echocardiography (Figures 1, 2).

Figure 1: Transesophageal echocardiography showing vegetation at ascending aorta

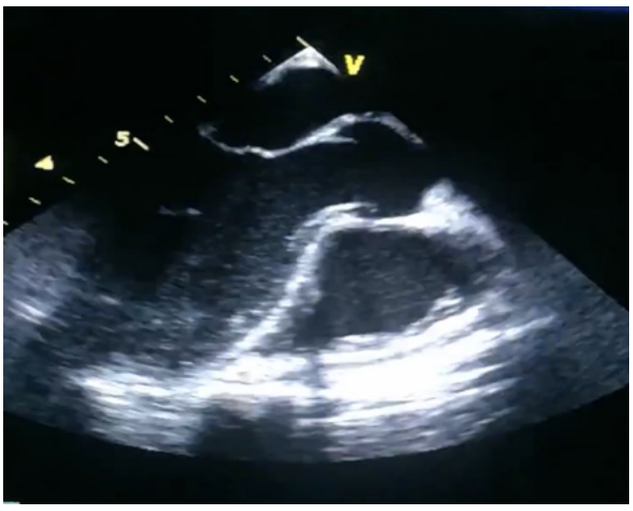
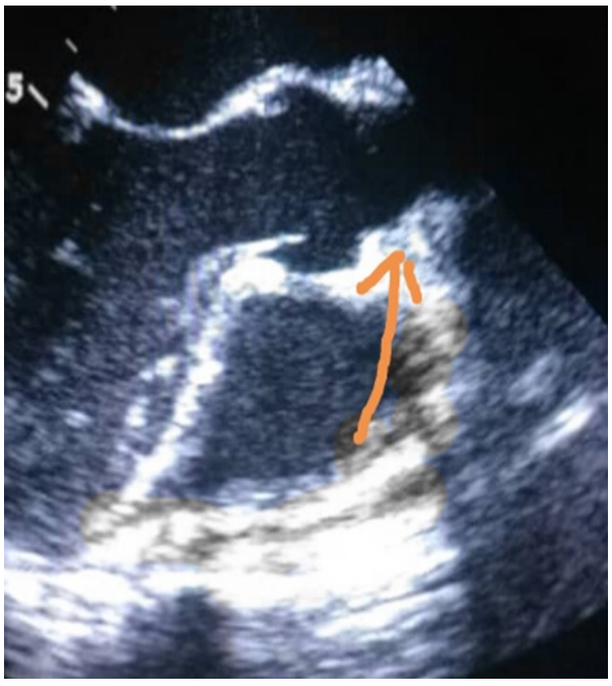


Figure 2: Arrowhead, heterogeneous echo density, irregular border vegetation started from sino tubular junction to ascending aorta



The patient was admitted to cardiology department as a case of infective endocarditis and treated by IV antibiotics for 4 weeks. Two blood cultures were negative. Echocardiography repeated at the end of the 4th week revealed no vegetation. The patient was discharged and was asked to come for follow up and to repeat ANA and anti-dsDNA antibodies. After one week, the patient presented with recurrence of fatigue, both wrist arthritis, skin rash and active discoid rash on the scalp. ANA was positive with high titer (1:10240), fine speckled pattern. Anti-dsDNA was negative. CBC revealed normocytic normochromic anaemia and high ESR (64mm/hr). Prednisolone 60mg daily and hydroxychloroquin 200mg twice a day were started. The patient is now doing well, he is in remission on prednisolone 5mg daily and hydroxychloroquin 200mg twice a day.

Discussion

Lupus symptoms are also symptoms of many other diseases and this sometimes makes diagnostic difficulties. A common shared feature between infective endocarditis and lupus are skin rash, fever, anaemia, arthritis and positive ANA (Table 1).

Table 1: Clinical features of IE versus SLE with LSE

Clinical feature	IE	SLE with LSE
Fatigue	+	+
Fever	+ rarely exceed 39.4°C	+ rarely exceed 38.89°C
Skin rash	+	+
Arthritis	+	+
Valvular dysfunction (murmur)	+ present in >85%	+ present in only 20%
Normocytic nomochromic anaemia	+	+ and can be macrocytic due to comb's positive haemolytic anaemia
Blood culture	+ positive	-negative
Echocardiography (vegetation)	+	+
ANA at diagnosis	Can be positive in 8% -30%	Positive in 98%
ANA after antibiotics	Become negative	Remain positive
Other features (thromboembolic)	+	+ and also clinical features of SLE

Fever in lupus is usually low-grade, rarely exceeding 38.89°C. A temperature greater than this should stimulate a search for an infection as the source of fever[4]. This patient had a fever of 39.5°C which made an infection (IE) on top of differential diagnosis. But fever is a common manifestation of SLE and can occur in 36-86% of patients[5,6]. Blood culture of this patient was repeated twice and both results were negative. Blood cultures are negative in 2% to 40% of infective endocarditis patients, with some studies reporting blood culture-negative rates of up to 71% [7-11].

ANA is positive in 98% of SLE patients and the usual ANA pattern in SLE is homogenous and fine speckled patterns. ANA is also positive in infective endocarditis in 8% to 30% of patients, with a titer as high as 1:640. But positive ANA test results revert to negative after antibiotics therapy[12-16].

In our patient, ANA was positive from beginning and when repeated after antibiotic treatment, it was highly positive (1:10240), the pattern was fine speckled and this supported a diagnosis of SLE with heart involvement (Libman sacks endocarditis).

Libman Sacks (LS) endocarditis LSE is a form of nonbacterial endocarditis that is seen in association with SLE. It is one of the most common heart related manifestations of lupus (the most common being pericarditis)[17]. It was first described by Emanuel Libman and Benjamin sacks at Mount Sinai Hospital in New York City in 1924[18,19]. Libman sacks endocarditis most commonly affects mitral and aortic valves, but other valves may be involved[18,19]. LS vegetations comprise immune complexes, mononuclear cells, fibrin, and platelet thrombi. It can be complicated by embolic cerebrovascular disease, peripheral arterial embolism, and by superimposed infective endocarditis. It is also associated with increased mortality[20]. There are laboratory tests to confirm the diagnosis of LSE[21]. However, the primary evaluation for LSE is by echocardiography. Trans-esophageal echocardiography has greater sensitivity and specificity than trans-thoracic echocardiography[21].

References

1. Petri M, Orbai AM, Alarcón GS, Gordon C, *et al.* Derivation and validation of Systemic Lupus International Collaborating Clinics Classification Criteria for SLE. *Arthritis Rheum*. 2012; **64**:2677-86.
2. "Handout on health": systemic lupus erythematosus. www. Niam. nih. gov. February 2015. Archived from the original on 17 June 2016. Retrieved 12 June 2016.
3. Durack DT, Lukes AS Bright DK. New criteria for diagnosis of infective endocarditis: Utilization of specific endocardiographic findings. Duke endocarditis service. *Am J Med*. 1994; **96**(3): 200-209.
4. William C. Shiel Jr. Lupus (systemic lupus erythematosus) *emedicinehealth*. Medically Reviewed on 29th March 2019.
5. Ryu S, Fu W, Petri M. *Lupus Sci Med*. Philadelphia. Associates and predictors of pleurisy or pericarditis in SLE; 2017; **4**:21.
6. Harvey A, Shulman L, Tumulty P, Systemic lupus erythematosus: review of the literature and clinical analysis of 138 cases. *J Allergy.* 1956; **27**:102.
7. Murdoch DR, Corey GR, Hoen B, Miro JM, *et al*. Clinical presentation, etiology, and outcome of infective endocarditis in the 21st century: cohort study. *Arch Inter Med*. 2009; **196**:463-473.
8. Raoult D, Casalta JP, Richer H, Khan M, *et al.* Contribution of systematic serological testing in diagnosis of infective endocarditis. *J Clin Microbial*. 2005; **43**:5238-42.
9. Morris AJ, Drinkovic D, Pottumarthy S, Strickett MG, *et al.* Gram stain, culture, and histological examination findings for heart valves removed because of infective endocarditis. *Clin Infect Dis*. 2003; **36**:697-704.
10. Lamas CC, Fournier PE, Zappa M, Branddao TJ, *et al.* Diagnosis of blood culture-negative endocarditis and clinical comparison between blood culture-negative and culture positive cases. *Infection*. 2016; **44**:459-466.
11. Topan A, Carstina D, Slavcovic A, Rancea R, *et al.* Assessment of the duke criteria for the diagnosis of infective endocarditis after twenty-years. An analysis of 241 cases. *Clujul Med*. 2015; **88:**321-326.
12. Smith B. Antibodies to candida and autoantibodies in subacute bacterial endocarditis. *Q J Med*. 1974; **43**:537-550.
13. Lerner P, Weinstein L. infective endocarditis in the antibiotic era. *N Engl J Med.* 1966; **274**:199-206.
14. Das SK, Cassidy JT. Importance of heart antibody in infective endocarditis. *Arch Intern Med.* 1977; **137**:591-593.
15. Holborow EJ, Bryceson AD. Circulating immune complexes in subacute bacterial endocarditis bacterial endocarditis and post-streptococcal glomerulonephritis. *J Clin Pathol*. 1977; **30**:308-311.
16. Gilliland BC, Cutler RE. The immune complex glomerulonephritis of bacterial endocarditis. *Medicine* (Baltimore). 1972; **51**:1-26.
17. "Libman Sacks endocarditis" Mosby's Medical, Nursing and Allied health dictionary (Fourth ed.) Mosby-yearBook, Inc. 1994. P.907.
18. Libman E, Sacks B. A hitherto undescribed form of valvular and mural endocarditis. *Arch intern Med.* 1924; **33** (6):701-737.
19. Patient. Info: Libman-Sacks endocarditis" Retrieved 2008-8-11.
20. Macias L, Qualls CR, *et al*. Libman Sacks endocarditis: Detection, characterization, and clinical correlates by three-dimensional transesophageal echocardiography. *J Am Soc Echocardiogr*. 2015; **28**(7):770-779.
21. Ibrahim AM, Siddique MS. Libmas Sacks endocarditis. (updated 2019 June 3). In: statpearl (internet). Treasure Island (FL): Statpearl publishing; Jan 2020.