Available online at www.sciencedirect.com
SciVerse ScienceDirect
Journal of the Chinese Medical Association 76 (2013) 521–523

www.jcma-online.com

Case Report

Subacute bacterial endocarditis presenting as left upper quadrant abdominal pain

Yung-Ta Kao [a], Chun-Ming Shih [a,b], Nai-Wen Tsao [c], Feng-Yen Lin [a,b,d,e], Nen-Chung Chang [a,b], Chun-Yao Huang [a,b,d,e,*]

[a] *Division of Cardiology, Department of Internal Medicine, Taipei Medical University Hospital, Taipei, Taiwan, ROC*
[b] *Department of Internal Medicine, School of Medicine, College of Medicine, Taipei Medical University, Taipei, Taiwan, ROC*
[c] *Division of Cardiovascular Surgery, Department of Surgery, Taipei Medical University Hospital, Taipei, Taiwan, ROC*
[d] *Graduate Institute of Clinical Medicine, College of Medicine, Taipei Medical University, Taipei, Taiwan, ROC*
[e] *Biomedical Apparatus Research Center, Taipei Medical University, Taipei, Taiwan, ROC*

Received November 2, 2011; accepted April 8, 2012

Abstract

Infective endocarditis is a microbial infection of the endocardial surface of the heart. Its symptoms and signs are varied, and include fever, heart murmur, peripheral embolism, and heart failure. The diagnosis of subacute bacterial endocarditis (SBE) is suggested by a history of an indolent process characterized by fever, fatigue, anorexia, and unexplained weight loss. These patients may have had an invasive procedure, such as dental work, or abused intravenous drugs prior to the diagnosis of SBE. Although uncommon, the patients may present with nonspecific symptoms caused by peripheral embolic events. Herein, we report a 25-year-old male diagnosed with SBE, who presented with the unusual symptom of sudden onset of left upper quadrant abdominal pain for 2 days. His clinical history is also discussed.

Keywords: bicuspid aortic valve; infective endocarditis; splenic infarction; *Streptococcus salivarius*; subacute bacterial endocarditis

1. Introduction

Subacute bacterial endocarditis (SBE) refers to infective endocarditis (IE) that has progressed over a period of time, from weeks to even months. IE is usually caused by organisms of low virulence, such as viridans streptococci,[1–4] and thus has a limited ability to infect other tissues. However, SBE requires a longer duration of antibiotic treatment than other infectious diseases, and it can be life threatening if not treated properly. Consequently, early diagnosis and treatment of SBE are pivotal for the successful management of this condition.

2. Case report

A 25-year-old male with a history of bicuspid aortic valve suffered from a sudden onset of pain in the left upper quadrant (LUQ) of abdomen for 2 days. He also complained of decreased appetite, rapid heart rate, and body weight loss (5 kg) in the previous month. Two weeks prior to admission to our facility, he had experienced postprandial abdominal fullness and acid reflux. He denied fever, night sweating, tremors, or heat intolerance. Two days prior to admission, a sudden onset of LUQ cramping pain developed and he vomited once after finishing dinner. A dull abdominal pain persisted, which was aggravated by deep inspiration, lying in a supine position, or turning his head to the right. He was taken to our emergency department and admitted under the initial diagnostic impression of acute gastroenteritis.

The patient did not smoke, drink alcohol, or use illicit drugs, but his grandfather had hypertension. He did not have

* Corresponding author. Dr. Chun-Yao Huang, Division of Cardiology, Department of Internal Medicine, Taipei Medical University Hospital, 252, Wu Hsing Street, Taipei 110, Taiwan, ROC.
E-mail address: cyhuang@tmu.edu.tw (C.-Y. Huang).

1726-4901/$ - see front matter
http://dx.doi.org/10.1016/j.jcma.2013.05.010

tarry stool passage, chest pain, dyspnea, or leg edema. On physical examination after admission, his weight was 64 kg and height 172 cm. His blood pressure was 111/73 mmHg, with a pulse rate of 92 beats per minute. The thyroid was normal in size, without palpable nodules, and the abdomen was ovoid and soft, with mild LUQ tenderness. No rebounding pain or muscle guarding was noted. The bowel sounds were normoactive, and breathing sounds were clear. The point of maximal impulse was located in the fifth intercostal space, about 9 cm to the left of the midline. The heart beats were regular. Furthermore, no significant cardiac murmur was heard. A plain abdominal X-ray revealed distended intestinal lumen. A complete blood cell count showed leukocytosis with left shift. The patient presented with anemia with a hemoglobin level of 10.9 g/dL (the mean cell volume was 77.9 fL). High levels of C-reactive protein (10.44 mg/dL) and ferritin (1938 ng/mL) were also noted. With this preliminary information, ileus, suspected intra-abdominal infection, and anemia of chronic inflammation were the tentative diagnoses. We also drew two sets of blood cultures, and cefmetazole 6 g daily was prescribed.

An abdominal sonogram showed diffuse liver parenchymal disease and gallbladder polyps, without remarkable changes of the pancreas, spleen, and kidneys. Upper gastrointestinal panendoscopy showed superficial gastritis. The patient complained of painful swelling of the left middle finger pulp, which was similar to the swelling he had experienced in his right little finger 1 month prior to admission (Fig. 1). The presence of Osler's nodes was duly noted. However, the patient did not have Janeway lesions. Because of the persistent LUQ abdominal pain, we performed abdominal computed tomography, which showed a wedge-shaped low-density area within the spleen (Fig. 2). At the same time, both blood cultures yielded growth of *Streptococcus salivarius*, which was susceptible to ampicillin, clindamycin, erythromycin, penicillin, vancomycin, cefotaxime, levofloxacin, and linezolid. We changed cefmetazole to penicillin and gentamicin to treat this case. Splenic infarction was impressed, which we suspected to be related to IE and cardiac emboli. The patient received transthoracic echocardiography, which showed a bicuspid aortic valve with mild aortic valve prolapse, thickened aortic valve, and mild aortic regurgitation (AR). To improve the resolution, transesophageal echocardiography was arranged 2 days later, which revealed a bicuspid aortic valve and thickening of the aortic valve with mild AR, ruling out IE. The cardiothoracic surgeon suggested antibiotic treatment first. Unfortunately, fever (a body temperature of 38°C) relapsed 3 weeks after starting the antibiotic treatment. We redrew blood cultures, but neither of the sets showed any bacterial growth. We performed transesophageal echocardiography again, which showed a bicuspid aortic valve with moderate to severe AR, and perivalvular abscess formation was highly suspected (Fig. 3). The cardiothoracic surgeon explained the indication of aortic valve replacement to the family and the patient himself. The patient then underwent an operation to replace the valve at another hospital.

Fig. 2. Wedge-shaped low-density area within the spleen on computed tomography (black circle).

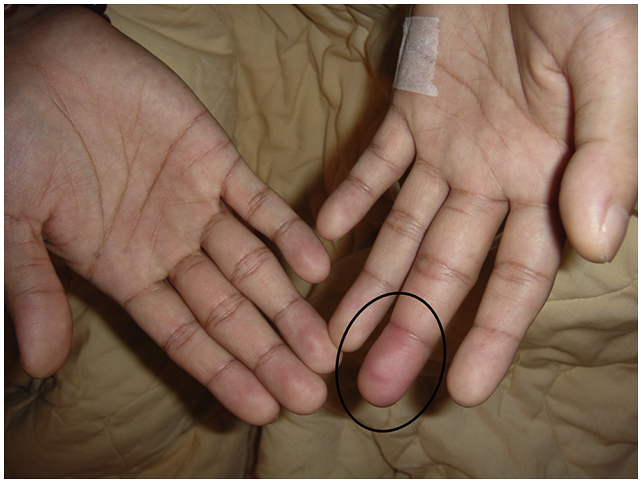

Fig. 1. Reddish nodule (about 1.0 cm × 1.0 cm × 0.5 cm) over the left middle finger pulp (black circle). (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

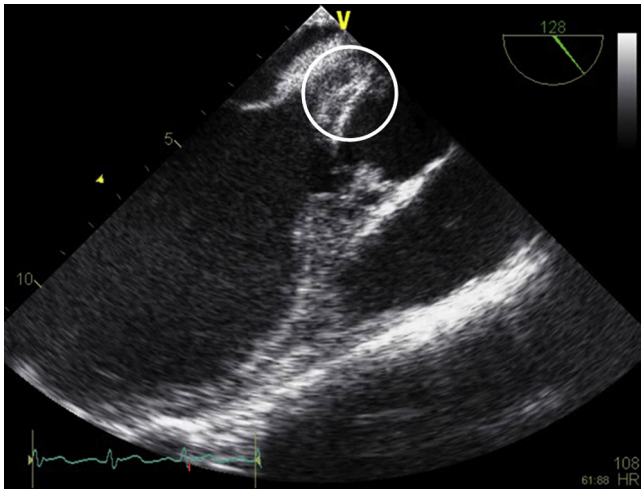

Fig. 3. Bicuspid aortic valve and perivalvular abscess on transesophageal echocardiogram (white circle).

3. Discussion

A bicuspid aortic valve is the most common congenital heart abnormality, with an incidence rate of about 1−2% in the general population.[5] It is associated with significant morbidity and mortality, especially after the fourth decade of life.[6] Surgical intervention is often required due to the progression of stenosis and regurgitation caused by calcification and IE.[7,8] Twenty-five percent of IE cases occur in the bicuspid aortic valve, and the incidence of IE in patients with bicuspid aortic valve ranges from 10% to 30%.[8,9] In general, patients with bicuspid aortic valve diagnosed with IE are younger and have a higher incidence of periannular complications, such as abscess formation.[6]

Empiric antibiotics should be prescribed as the initial treatment for IE. SBE requires a medication regimen that is effective against most streptococci, such as ampicillin plus gentamicin. Treatment should be adjusted according to a sensitivity test once the microorganism has been identified, and 4−6 weeks of therapy is usually adequate. Surgical intervention is indicated in complicated IE patients (i.e., those with heart failure or uncontrolled infection), which accounts for one-third of all IE cases.[10,11] Major indications for surgery include moderate or severe heart failure not responding to medical treatment, persistent bacteremia in spite of antimicrobial therapy, fungal infection, and perivalvular abscess (as shown in the present case). Major arterial embolic events such as splenic infarction are also relative indications for surgical intervention in IE. The best time to operate in order to prevent further embolic events is within 1 week of diagnosis, because the frequency of emboli decreases rapidly after 1−2 weeks of antimicrobial therapy.[12] However, embolization itself is still a weaker indication for valve replacement than heart failure.[13,14]

S. salivarius is a species of Gram-positive bacteria. It usually colonizes the mouth, dental plaques, and upper respiratory tracts of humans. However, it is rarely found in the bloodstream. *S. salivarius* bacteremia is a rare entity in immunocompetent patients, and patients with *S. salivarius* bacteremia tend to be younger than those with *Streptococcus bovis* bacteremia.[15] However, the possibility of developing IE is higher in patients with pre-existing heart disease suffering from *S. salivarius* bacteremia. To date, there are limited reports regarding *S. salivarius*-induced IE in patients with bicuspid aortic valve complicated with perivalvular abscess formation and splenic infarction, highlighting the importance of the present case.

In conclusion, patients with pre-existing valvular heart diseases or congenital heart diseases are prone to IE. Bailout surgery is needed if empiric antimicrobial therapy fails or complications are present, such as perivalvular abscesses. The occurrence of arterial embolic events is also a relative indication for surgery, especially within 1 week of diagnosis and antimicrobial therapy. The isolation of *S. salivarius* in blood cultures should not be regarded as contamination and should be investigated, especially for patients with pre-existing cardiac lesions and vague complaints.

References

1. Cunha BA, D'Elia AA, Pawar N, Schoch P. Viridans streptococcal (*Streptococcus intermedius*) mitral valve subacute bacterial endocarditis (SBE) in a patient with mitral valve prolapse after a dental procedure: the importance of antibiotic prophylaxis. *Heart Lung* 2010;**39**:64−72.
2. Hermans PE. The clinical manifestations of infective endocarditis. *Mayo Clin Proc* 1982;**57**:15−21.
3. Gould FK, Elliott TS, Foweraker J, Fulford M, Perry JD, Roberts GJ, et al. Guidelines for the prevention of endocarditis report of the Working Party of the British Society for Antimicrobial Chemotherapy. *Antimicrob Chemother* 2006;**57**:1035−42.
4. Anderson JL, Sande MA, Kartalija M, Muhlestein JB. Infective endocarditis. In: Fuster V, Alexander RW, O'Rourke RA, editors. *Hurst's the heart*. 11th ed. New York: McGraw-Hill; 2004. p. 2004−31.
5. Fedak PW, Verma S, David TE, Leask RL, Weisel RD, Butany J. Clinical and pathophysiological implications of a bicuspid aortic valve. *Circulation* 2002;**106**:900−4.
6. Kahveci G, Bayrak F, Pala S, Mutlu B. Impact of bicuspid aortic valve on complications and death. *Tex Heart Inst J* 2009;**36**:111−6.
7. Basso C, Boschello M, Perrone C, Mecenero A, Cera A, Bicego D, et al. An echocardiographic survey of primary school children for bicuspid aortic valve. *Am J Cardiol* 2004;**93**:661−3.
8. Ward C. Clinical significance of the bicuspid aortic valve. *Heart* 2000;**83**:81−5.
9. Kahveci G, Bayrak F, Mutlu B, Bitigen A, Karaahmet T, Sonmerz K, et al. Prognostic value of N-terminal pro-B-type natriuretic peptide in patients with active infective endocarditis. *Am J Cardiol* 2007;**99**:1429−33.
10. Aranki SF, Adams DH, Rizzo RJ, Couper GS, Sullivan TE, Collins Jr JJ, et al. Determinants of early mortality and late survival in mitral valve endocarditis. *Circulation* 1995;**92**:143−9.
11. Jung JY, Saab SB, Almond CH. The case for early surgical treatment of left-sided primary infective endocarditis. *J Thorac Cardiovasc Surg* 1975;**70**:509−18.
12. Steckelberg JM, Murphy JG, Ballard D, Bailey K, Tajik AJ, Taliercio CP, et al. Emboli in infective endocarditis: the prognostic value of echocardiography. *Ann Intern Med* 1991;**114**:635−40.
13. Douglas JL, Dismukes WE. Surgical therapy of infective endocarditis on natural valves. In: Kaye D, editor. *Infective endocarditis*. New York: Raven Press; 1992. p. 397−411.
14. Durack DT. Nine controversies in the management of endocarditis. In: Petersdorf RG, Adams RD, Braunwald E, editors. *Harrison's principles of internal medicine*. 10th ed. New York: McGraw-Hill; 1983. p. 35−45.
15. Corredoira JC, Alonso MP, Garcia JF, Casariego E, Coira A, Rodriguez A, et al. Clinical characteristics and significance of *Streptococcus salivarius* bacteremia and *Streptococcus bovis* bacteremia: a prospective 16-year study. *Eur J Clin Microbiol Infect Dis* 2005;**24**:250−5.