

Bilateral Olecranon Purulent Bursitis Complicating Prosthetic Valve Endocarditis Caused by Oxacillin Susceptible Staphylococcus aureus : A Case Report

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Abstract

Purulent bursitis secondary to infective endocarditis is a rare presentation. Herein, we report a patient with bilateral olecranon purulent bursitis complicating prosthetic valve endocarditis. Both blood and bursal fluid cultures yielded oxacillin susceptible Staphylococcus aureus. (J Intern Med Taiwan 2003;14: 196-200)

Key Words : Olecranon purulent bursitis, Prosthetic valve endocarditis,
Staphylococcus aureus

Introduction

Bacterial endocarditis and its characteristic lesion, a vegetation, is a mass of platelets, fibrin, microorganisms, and scant inflammatory cells. It most commonly involves either native or prosthetic heart valves, but may also occur at the low-pressure site of a septal defect, on the chordae tendineae, on intracardiac devices themselves, or on the mural endocardium 1. Acute inflammation of the olecranon bursa is a common condition that can result from infection or acute gout attack. Septic bursitis may occur secondary to puncture wounds, surrounding cellulitis, or after a local therapeutic injection. However, bursitis was rarely caused by a septic embolization of infective endocarditis. In the present report, a patient with bilateral olecranon bursitis complicating oxacillin susceptible endocarditis of the porcine aortic valve was described.

Case report

A 73-year-old male was admitted under the impression of pneumonia. He complained

of fever, shortness of breath and productive cough for one week. He also experienced malaise, loss of appetite and fatigue in the past one week. A replacement of the severe regurgitated aortic valve with porcine aortic valve was done five years ago. After the operation, he did not experience chest pain and paroxysmal nocturnal dyspnea. He has the comorbid chronic obstructive pulmonary disease and atrial fibrillation for twenty years. In addition, he has the habit of cigarette smoking for forty years.

At the time of admission, he was in acute ill-looking, the body temperature was 38.4 °C, the respiratory rate 24/min, the heart rate showed 124/min and irregular, and the blood pressure 130/65 mmHg. A grade III diastolic murmur was heard at left upper sternal border. Rales on both lungs were noted on auscultation. The bowel sounds was hypoactive and the abdomen was soft. The skin, musculoskeletal or neurological examination was unremarkable. Laboratory studies showed the following values: hemoglobin, 11.3g/dL; hematocrit 33.5%, leukocyte count 9.2×10^9 /L with a differential count of 93% neutrophils, 1.3% lymphocytes and 5.7% monocytes; platelet count, 27×10^9 /L; C-reactive protein 19.8mg/dL; blood urea nitrogen 57 mg/dL (normal range, 5-20 mg/dL); creatinine 1.4mg/dL (normal range, 0.7-1.5 mg/dL); and aspartate transaminase, 42U/L (normal range, 15-35 U/L). Two blood cultures were obtained, and antibiotic with ceftriaxone was initiated. Chest radiograph disclosed patchy airspace infiltrates bilaterally.

Unfortunately, his consciousness became stupor on the next day. Endotracheal intubation was done and mechanical ventilation was supported. Then he was transferred to intensive care units. Two sets of blood culture were repeated again. On the third hospital day, conjunctival hemorrhages, Janeway lesions over both hands and right side olecranon bursitis

(Fig. 1) were noted. Gram stain of the aspirated bursal fluid revealed many gram-positive cocci. A transthoracic echocardiograph demonstrated a mobile vegetation, 0.7×0.4cm in size, located on aortic side of the prosthetic aortic valve (Fig. 2). Diagnosis of acute bacterial endocarditis was established. Oxacillin 2gm intravenously was administered every 6 hours. On the fourth day, left side olecranon bursitis developed (Fig. 3) and gram stain of bursal fluid showed gram-positive cocci. Cultures of the four sets of blood and two samples of bursal fluid all yielded an oxacillin susceptible *Staphylococcus aureus*. His family members refused the surgical intervention. One week later, the patient died of sepsis and multiple organ failure despite intensive antibiotic treatment.

Discussion

We searched the published literatures on the infective endocarditis associated with bursitis. Only three patients were identified from two articles selected by computer generated searching of MEDLINE (1966 through 2002) and CINAHL database. One

patient suffered purulent bursitis over the unilateral olecranon and two patients suffered trochanteric bursitis 2,3. The etiology of infection for all of these three patients is *S. aureus*. According to our knowledge, our present report identified the first one of bilateral olecranon bursitis caused by *S. aureus* as a complication of prosthetic valve endocarditis.

A bursa is a closed sac containing a small amount of synovial fluid and lined with a cellular membrane. Bursae are present in areas where tendons and muscles move over bony prominences; they facilitate such motion. Olecranon bursa lies over the olecranon process. Acute inflammation of the olecranon bursa is a common condition that can result from infection or acute gout attack. Septic bursitis may occur secondary to puncture wounds, surrounding cellulitis, or after a local therapeutic injection. The organisms most frequently responsible are staphylococci (*S. aureus*, *Staphylococcus epidermidis*) and streptococci. According to the previous published articles, *S. aureus* is responsible for around 80% of cases of septic bursitis 4,5. *S. aureus* is identified in 88% of culture-proven cases of olecranon septic bursitis 6. In cases of systemic illnesses or an immunocompromised state, however, case reports of rare types of organisms have been recorded. *Cryptococcus neoformans* was identified as the causative organism for olecranon bursitis in a patient with cirrhosis. A patient with type II diabetes was reported to have an olecranon bursitis caused by *Aspergillus terreus*. These reports emphasize the importance of organism identification in immunocompromised patients with a septic olecranon bursitis 7.

To differentiate between septic and nonseptic olecranon bursitis, the diagnosis is best made by aspiration of the bursal sac under sterile conditions with a gram stain and culture of the aspirated fluid. As *S. aureus* is the most common organism associated with septic olecranon bursitis, the initial antibiotic of choice is the anti-staphylococcal penicillin. A 2-week course is necessary for successful resolution of the bacterial infection. Immunocompromised patients must undergo a longer treatment to guarantee a successful outcome. Repeated closed-needle aspiration of the excessive fluid from the bursal sac is usually required in addition to antibiotic therapy.

Closed-needle aspiration is the preferred initial drainage procedure for most patients with septic bursitis. Incision and drainage of the bursal sac is recommended in cases that do not respond to at least one aspiration procedure. If closed-needle aspiration, antibiotics, or incision and drainage fail, excision of the bursal sac could be required 7.

Systemic embolism is a frequent complication of infective endocarditis and most commonly involves the spleen, the kidneys, the liver, and the iliac or mesenteric arteries. Splenic abscess may develop from bacteremic seeding of a previously infarcted area or direct seeding of the spleen by an infected embolus 1. Bilateral

olecranon purulent bursitis is a rare complication of infective endocarditis. The blood supply of bursa sac is not as adequate as spleen, kidney, or liver, so infective endocarditis is seldom complicated with septic bursitis.

When a patient has septic bursitis, differential diagnosis should include infective endocarditis. A complete and careful physical examination should be repeated and looked for peripheral stigmata of bacterial endocarditis carefully, which may be present in only 20-30% of patients with bacterial endocarditis. If infective endocarditis was confirmed, *S. aureus* infection should be highly suspected. Anti-staphylococcal therapy, such as oxacillin, should be administered immediately. Patients who have congestive heart failure, perivalvular invasive disease, or uncontrolled infection despite appropriate antibiotic therapy should undergo the surgical intervention for infective endocarditis that can decrease mortality. The hemodynamic status of the patient at the time of valve-replacement surgery is the principal determinant of operative mortality. The optimal time to perform surgery is before severe hemodynamic disability or spread of the infection to perivalvular tissue has occurred. Infective endocarditis involving a prosthetic valve is another common indication for surgical evaluation. Recent studies emphasized the risk of infective endocarditis after aortic valve replacement was approximately 1 percent at 12 months and 2 to 3 percent at 60 months 8. More patients with *S. aureus* prosthetic valve endocarditis survive with medical and surgical therapy than with medical therapy alone, suggesting that *S. aureus* prosthetic valve endocarditis alone may be an indication for valve replacement surgery 9.

Summary

Although bilateral olecranon purulent bursitis complicating prosthetic valve endocarditis is rare, physicians should look for peripheral stigmata and use echocardiograph to establish the diagnosis of bacterial endocarditis once the septic bursitis is found. If infective endocarditis is established, anti-staphylococcal therapy should be administered pending the microbiological results. We also highlight the importance of surgical intervention for prosthetic valve endocarditis caused by *S. aureus*. Most of the septic bursitis could be controlled under closed-needle aspiration and antibiotic treatment. If failed, excision of the bursal sac is required.

Fig.1. right side olecranon bursitis

Fig.2. a mobile vegetation (arrow), 0.7×0.4cm in size, located on aortic side of the prosthetic aortic valve

Fig.3.left side olecranon bursitis

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人工心臟瓣膜之心內膜炎併發雙側鷹嘴化膿性滑液囊炎：一病例報告

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摘 要

由感染性心內膜炎所引發的化膿性滑液囊炎是很少見的，在此我們提出一個病

例，其因人工心臟瓣膜之心內膜炎併發雙側鷹嘴化膿性滑液囊炎，血液及滑液囊液的細菌培養皆為金黃色葡萄球菌。回顧過去的報告只有少數的病例，全部都只有單側之滑液囊炎且致病菌皆為金黃色葡萄球菌，而我們的病例卻是雙側可為僅見。另外由金黃色葡萄球菌引起的人工心臟瓣膜之心內膜炎，外科合併內科治療之預後較單獨內科治療為佳，當病患有人工心臟瓣膜之心內膜炎且出現化膿性滑液囊炎時，金黃色葡萄球菌是首要的致病菌，除了使用抗金黃色葡萄球菌之抗生素外，應及早請外科介入。