

Acute Endocarditis Caused by *Streptococcus agalactiae*

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ABSTRACT

Streptococcus agalactiae has been best known as the most common causative agents of postpartum infection and neonatal sepsis. More recently, the incidence of *S. agalactiae* is widely recognized as increasing in nonpregnant elderly adults. We here report a 58-year-old woman with no known underlying disease suffering from *S. agalactiae* acute endocarditis with right renal infarction due to septic emboli. *S. agalactiae* endocarditis has high mortality rate because this condition is aggressive in nature, and frequently requires cardiac surgery in some situation. Cardiac surgery may be necessary in these patients due to rapid destruction of the valves. (*J Infect Dis Antimicrob Agents* 2011;28:179-82.)

Note: This case had been presented and discussed in the Interhospital Case Conference on Infectious Disease (ICCID), 19 May 2011, Bangkok, Thailand.

CASE REPORT

A 58-year-old woman, a upon nurse office worker with no known underlying disease, developed sudden onset of right flank pain for 5 days, followed by fever and chill. The pain was persistent and radiated to right upper quadrant of abdomen and right thigh but was not aggravated by movement. She denied rash, diarrhea, dysuria, frequency, urgency and chest pain. One day before admission, she still had the high grade-fever and right upper quadrant pain. She then came to emergency

department of Phramongkutklao Hospital, Bangkok, Thailand.

Pertinent physical findings upon admission were high grade fever (38.5-39°C), blood pressure of 120/60 mmHg, and pulse rate 112 beats/min. Cardiovascular examination revealed faint S1, normal S2, and pansystolic murmur grade III/VI at mitral valve area radiated to left axilla. There was no cyanosis, clubbing, or edema in the extremities, but significant swelling and warmth at right tarsal joint and dactylitis at the second

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metatarsophalangeal joint of left foot.

Laboratory tests revealed a white blood cell count of 7,300 per mm³ (61% neutrophils, 23% band form neutrophils, 12% lymphocytes, and 4% monocytes). Platelet count of 45,000 per mm³, hemoglobin of 14.5 g/dL, and hematocrit of 42.1%. Anti HIV was negative. Blood chemistry test were unremarkable. A urinalysis showed 3+ proteins, 2+ bloods, with 30-50/HPF of red blood cells, 3-5/HPF of white blood cells and nitrites negative. Chest X-ray showed no cardiomegaly, infiltrate nor effusion. An electrocardiogram showed normal sinus rhythm at 84 beats per minute with a normal axis and occasional premature ventricular contraction.

Transthoracic echocardiogram (TTE) was performed, and revealed an oscillating mass was identified at mitral valve area, 2 cm in size, mild to moderate mitral valve regurgitation, and good left

ventricular ejection fraction. Computed tomography scan of the whole abdomen revealed a wedge shape hypodensity lesion at the right kidney, likely renal infarction was diagnosed (Figure 1). Initially a diagnosis of acute infective endocarditis possibly caused by *Staphylococcus aureus*, *Streptococcus pyogenes* or *S. agalactiae* was made. Intravenous ceftriaxone 4 g/day and cloxacillin 8 g/day were prescribed. She gradually made clinical improvement in the following week. Both samples of blood cultures drawn upon admission grew *S. agalactiae*. The MIC was lower than 0.06 mg/mL, then the antibiotics were changed to penicillin 20 million units/day for 4 weeks and combined with gentamicin 80 mg every 8 hours for 2 weeks. She finally made a complete recovery, and discharged home one month after admission but still had mild mitral valve regurgitation with no clinical of dyspnea (functional class I/IV).

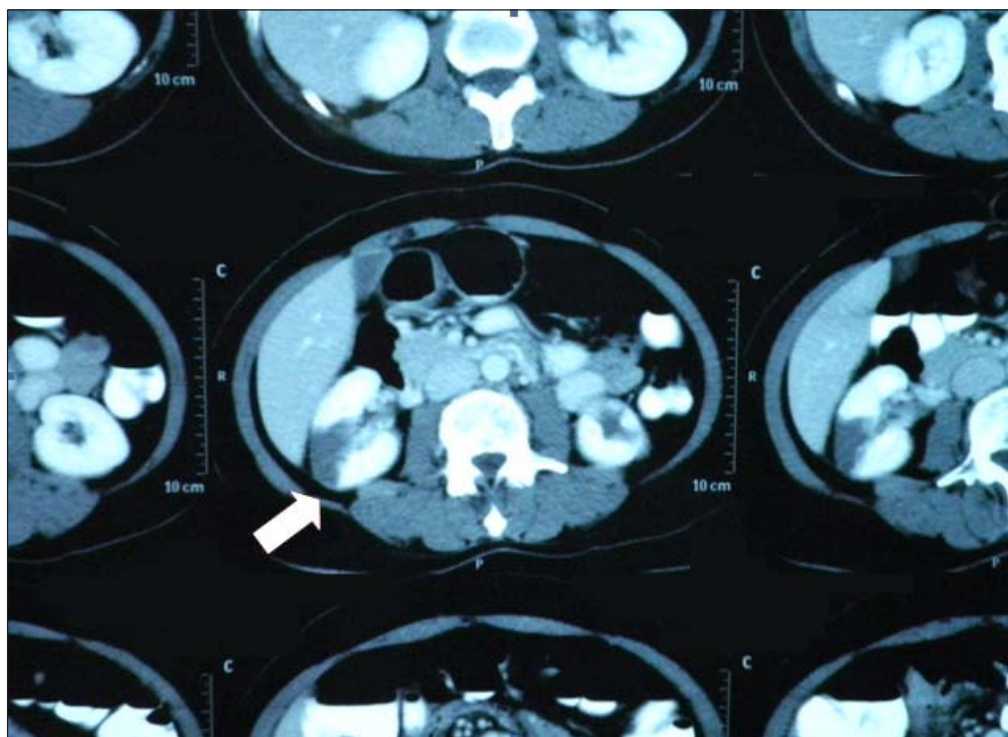


Figure 1. Abdominal computed tomography revealed: a hypodensity wedge-shape lesion at right kidney is compatible with renal infarction (arrow).

DISCUSSION

In this patient presented with acute fever, sudden severe right flank pain radiated to right upper quadrant abdomen and thigh; but was not aggravated by movement. Cardiovascular examination revealed faint S1, normal S2, pansystolic murmur grade III/VI at mitral valve area radiate to left axilla, compatible with mitral valve regurgitation and swelling and warmth at right tarsal joint and dactylitis at the second metatarsophalangeal joint of left foot. Computed tomography scan of the whole abdomen revealed right kidney infarction. Transthoracic echocardiogram revealed an oscillating mass at mitral valve area, size 2 cm, mild to moderate mitral valve regurgitation. The blood culture grew *S. agalactiae* for 2 specimens. She was diagnosed *S. agalactiae* endocarditis based on Modified Duke's criteria. (2 major criteria's and 2 minor criteria).

S. agalactiae endocarditis is an aggressive disease with a high rate of local and systemic complications. The most common valve is mitral valve (48%), aortic valve (29%), mitral and aortic valves (10%), tricuspid valve (5%). Tricuspid valve typically occurs in intravenous drug user.

Cardiac surgery is usually required because of heart failure and emboli.^{1,2,6,7} Endocarditis affected a native valve (most often the mitral valve) about 83%. Surgical valve replacement was performed for 40%. Half of them died. Mortality rates for patients with native and prosthetic valve endocarditis were 36% and 100%.⁸ The echocardiographic studies usually detect abnormalities. Big vegetations or valvular destruction are common.^{1,2,4} The large size of the vegetations and their friability may explain the high rate of systemic emboli.^{1,2} The mortality rate, although still high, has decreased. The mortality rate is now about 44%. Over the past 40 years, reviews have shown *S. agalactiae* endocarditis to occur in mostly

older patients. There is a known association between *S. agalactiae* endocarditis and chronic systemic diseases, such as alcoholism, diabetes mellitus, liver cirrhosis, malignancy, intravenous drug use, and human immunodeficiency virus.⁹⁻¹¹

Serious complications of *S. agalactiae* endocarditis are common, such as major emboli, congestive heart failure, local abscess formation, and had heart block. Embolic phenomena are often the initial manifestation of endocarditis, which leads to its diagnosis. The frequency of emboli probably relates to the large size of the vegetations, which is characteristic of group B streptococcus infections (like this patient).

S. agalactiae was uniformly susceptible to penicillin (MIC ≤ 0.1 mg/mL).^{1,5} However, penicillin-tolerant *S. agalactiae* isolates have been described in patients with serious *S. agalactiae* infections that have been associated with therapeutic failures.¹²⁻¹⁴ Therefore, it is important to recognize penicillin tolerance, because it could be associated with treatment failure.

Combining a β -lactam antibiotic with an aminoglycoside provides synergy against tolerant, penicillin-sensitive and penicillin-resistant cases of *S. agalactiae*. Therefore, most authorities recommend penicillin G or ceftriaxone for 4 to 6 weeks, with an aminoglycoside for the first 2 weeks. Vancomycin is an alternate choice for patients with penicillin/cephalosporin allergies. In this patient the MIC is lower than 0.6, then the antibiotics were changed from ceftriaxone and cloxacillin to penicillin G 18 million units per day for 4 week and combination with gentamicin 80 mg intravenous every 8 hours in the first 2 weeks. Her clinical was improved and she can discharge from the hospital in 2 weeks after the admission.

CONCLUSION

S. agalactiae endocarditis is the rare condition

but has a high mortality rate. More than half of all cases arise in patients with risk factors such as cardiac disease, diabetes mellitus, alcoholism, solid or hematological tumor, peripheral vascular disease, nephropathy and most cases produce embolism.

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