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## Beta-Hemolytic Streptococcus Group A Endocarditis: A Rare Clinical Presentation

Aysha Almas and Muhammad Tariq

### ABSTRACT

A case report of an elderly gentleman is reported herein, who presented with one week history of fever, drowsiness and left lower limb weakness. Examination revealed left lower limb weakness with power of grade 3/5. His workup showed evidence of infection and multiple cerebral infarcts on the right side. Blood culture grew *Streptococcus pyogenes*. Echocardiogram showed two vegetations on the aortic valve. Fever was the main presenting feature in this case but it was the presentation of patient with multiple cerebral infarcts that lead to the diagnosis of infective endocarditis. The organism causing Infective Endocarditis (IE) in this patient was a rare one.

**Key words:** *Infective endocarditis. Multiple cerebral infarcts. Group A beta-hemolytic streptococcus (GABS).*

### INTRODUCTION

Despite advances in medical, surgical and critical care interventions, infective endocarditis remains a disease that is associated with considerable morbidity and mortality.<sup>1</sup> Presence versus absence of predisposing condition was associated with lower in-hospital mortality (16% versus 33%) and 6-month mortality (24% versus 48%).<sup>2</sup> Predisposing cardiac conditions are valvular disease, rheumatic fever, history of endocarditis, congenital heart disease and pacemaker wires.<sup>2</sup> Non-cardiac predisposition stems from central line insertion within 6 months and misuse of injected drugs.

Common organisms responsible usually include *Streptococcus viridins* group, *Enterococcus*, *Staphylococcus aureus* and *Streptococcus epidermis*.<sup>3</sup> Other organisms have been reported rarely and include anaerobic gram-negative bacilli, *Coxiella burnetti*, *Chlamydia*, *Candida*, *Aspergillus* and *Histoplasma*.<sup>4</sup> Group A Beta-haemolytic *Streptococcus* (GABS), *Streptococcus pyogenes* is an uncommon cause of infective endocarditis.<sup>4</sup>

The presentation of IE often includes extra-cardiac manifestations or findings that are associated with intra-cardiac extension of infection. Fever is the most common sign and symptom. Upto 65% of embolic events in infective endocarditis involve the central nervous system and neurologic complications develop in 20 to 40% of all patients with infective endocarditis.<sup>6</sup> The importance of making a correct diagnosis is emphasized by the potentially fatal complications that can occur as a result of this condition.<sup>3</sup>

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### CASE REPORT

A 68-year-old man with no prior known comorbid conditions, presented to the emergency room with history of fever for 7 days, left lower limb weakness for 3 days and drowsiness for one day. The fever was high grade. Past history was not significant for any illness. Family history was positive for hepatocellular carcinoma and pulmonary tuberculosis. On examination, he was an elderly cachectic looking man, lying in bed, drowsy but arousable to verbal command. He was febrile with temperature of 39°C, tachycardic with pulse of 90/minute. His cardiovascular examination was normal and there were no murmurs on auscultation. The chest and abdominal examination was unremarkable. On neurological examination, he was disoriented in time, place and person, neck was supple and power was 3/5 in left lower limb, both planters were down going.

His initial laboratory workup was sent from emergency room along with blood culture (Table I). The X-ray chest was normal. Initial assessment of possible bacterial meningitis was made. He was started on treatment for meningitis with intravenous ceftriaxone 2-gram twice daily and intravenous fluids after sending the cerebrospinal fluid analysis. The CT brain at this point in time showed right occipito-parietal and anterior

**Table I:** Initial lab investigations.

Hemoglobin	6.6 mg/dl
WBC	15.2
Platelets	260
Bun	41
Creatinine	1.6
Sodium	141
Potassium	3.9
Chloride	110
HCO <sub>3</sub>	25
Malarial parasite	-ve
RBS	122
ESR	50
LFT	Normal

parietal infarcts. The lumbar puncture showed glucose of 86 mg/dl, protein of 50 mg/dl and white cells of 32 with predominant neutrophils. Two blood cultures grew GABS, *Streptococcus pyogenes*, which was sensitive to penicillin group and cephalosporins. Ceftriaxone was continued. The patient made a remarkable improvement on day 2 of admission. His conscious level had improved and he became afebrile. *Streptococcus pyogenes* is an unusual organism to cause meningitis. It was thought that this patient could have IE with history of fever, positive blood culture and multiple cerebral infarcts. A trans-thoracic echocardiogram was, therefore, ordered. Trans-thoracic echocardiogram revealed medium sized 9 mm vegetation on non-coronary cusp and a small vegetation on right coronary cusp of aortic valve with severe aortic regurgitation. Interestingly, no murmur was audible. Based on this, diagnosis of IE was made and gentamycin was added to the treatment.

In subsequent days, the patient started going into recurrent episodes of heart failure due to aortic regurgitation and IE. He was treated with intravenous lasix and was started on low dose ACE inhibitors. Patient also developed right-sided pneumonia and the antibiotic was changed to piperacillin tazobactam. Surgery of the aortic valve was indicated at this point in time. Despite repeated efforts to convince the family to go for surgery, they were reluctant due to unstable condition of patient. The patient kept on going into recurrent episodes of heart failure and pneumonia and ultimately expired. The cause of death was recurrent heart failure and sepsis.

## DISCUSSION

The diagnosis of IE in this case came from history of fever, positive blood culture for GABS, *Streptococcus pyogenes* and presence of vegetations on aortic valve. The organism was, however, atypical. There was one major criteria and 3 minor criteria (atypical organism in blood culture, fever and embolic phenomena) present to fulfill Duke's criteria for diagnosis of IE.<sup>7</sup> This patient was a difficult one to diagnose IE as *Streptococcus pyogenes* is an extremely rare organism to cause IE. The clinical suspicion mainly arose from history of fever, positive blood culture and multiple cerebral infarcts.

Gram positive cocci comprising of various species of *Streptococci* and *Enterococci* as well as *Staphylococcus aureus*, are the leading cause of commonly acquired native valve endocarditis.<sup>8</sup> The leading example of *Streptococci* are alpha hemolytic *Streptococcus*, a heterogenous collection of species that are loosely grouped together under the term *Streptococcus viridans* (40-45%).<sup>8</sup> Others include 20% group D (*Enterococcus* and *Strep. bovis*) and 15% group H (sanguis). Fifteen percent belong to other

sero groups B,C,G,K and 5% are anaerobic *Streptococcus*. In this patient, IE was caused by a rare pathogen, GABS. The incidence of severe infectious complication caused by GABS has been increasing over the last years due to immunosuppression and HIV.<sup>9</sup> This patient did not have any history of HIV drug abuse and his HIV status was not known. *Strep. pyogenes* is certainly a rare cause of IE. In our own hospital in a study done by Tariq *et al.* over a 5-year period on 66 patients, *Strep. pyogenes* was not isolated from a single case of IE.<sup>10</sup>

Patient with IE, who have abnormal white cell count, serum albumin concentration, heart rhythm, creatinine, presence of 2 major Duke criteria or visible vegetation on initial echocardiogram carry a poor prognosis.<sup>4</sup> This patient, unfortunately, had a high white cell count, low albumin, developed atrial fibrillation, renal failure and a visible vegetation on initial echocardiography, and hence had a number of bad predictors of poor outcome for IE. Mortality from *Strep. pyogenes* is around 8%. In the presence of heart failure, mortality rate of native valve endocarditis is 55-85%.<sup>11</sup>

This patient had IE from a very rare organism and had a number of bad predictors of mortality, which resulted in his fatal outcome.

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