A patient with microcytic anemia and fever

Sacha Bhatia MD MBA¹, Bindee Kuriya MD¹, Lynfa Stroud MD¹, Anita Rachlis MD¹, Neill KJ Adhikari MD CM MSc²

A 62-year-old man with a history of mechanical aortic valve insertion and ascending aorta replacement in 1997 presented to his family doctor in August 2004 with a two-week history of melena after recently returning from a six-month vacation in Mexico. The patient had no other abdominal complaints. He took warfarin but did not take nonsteroidal anti-inflammatory agents, acetylsalicylic acid or alcohol. The patient had no history of liver or peptic ulcer disease. He had lost 7 kg over the past month, but did not complain of fever or night sweats. On physical examination, vital signs were normal, the second heart sound was mechanical, and there were no abnormal findings. Laboratory investigations showed a borderline microcytic anemia (hemoglobin 76 g/L; mean corpuscular volume 79 fL; mean corpuscular hemoglobin concentration 323 g/L), a therapeutic international normalized ratio (2.6) and an elevated creatinine level (112 $\mu\text{mol/L}$). His stool was positive for occult blood, although the ferritin level was high

(623 $\mu\text{g/L}$). Other routine blood work was normal. The patient was admitted to hospital for investigation of the anemia.

Gastroscopy and colonoscopy were normal. The patient was subsequently noted to be febrile (39°C), and blood cultures were obtained. On the fourth hospital day, the patient was found asystolic after an acute coronary syndrome with ST segment elevation. Resuscitation was successful, and he was admitted to the intensive care unit. Because of the unexplained melena, an abdominal computed tomography scan was performed, which showed a pseudoaneurysm of the left hepatic artery communicating with the bile ducts (Figure 1). A transesophageal echocardiogram was performed, which showed a mitral valve vegetation and a perivalvular abscess around the aortic graft (Figure 2). On the day of the transesophageal echocardiogram, blood cultures were reported as positive.

What is the organism and what is the diagnosis?

Figure 1) Computed tomography abdominal scan showing a pseudoaneurysm of the left hepatic artery (black arrow) communicating with the bile ducts

Figure 2) Transesophageal echocardiogram showing a perivalvular abscess (large black arrow) around the aortic valve (small black arrow indicates the aortic graft; large white arrow indicates the left atrium; small white arrow indicates the left ventricle). The patient also had a mitral valve vegetation (not shown)

¹Department of Medicine; ²Interdepartmental Division of Critical Care, University of Toronto, Toronto, Ontario

Correspondence: Dr Neill KJ Adhikari, Department of Critical Care Medicine, Sunnybrook Health Sciences Centre, 2075 Bayview Avenue, Toronto, Ontario M4N 3M5. Telephone 416-480-6100 ext 7859, fax 416-480-4999, e-mail neill.adhikari@sunnybrook.ca

Received and accepted for publication December 14, 2005

DIAGNOSIS

Listeria monocytogenes subsequently grew in four sets of blood cultures, taken at hospital days 1, 2 and 4. The patient was therefore diagnosed with *Listeria* endocarditis complicated by a mycotic aneurysm of the left hepatic artery.

DISCUSSION

L. monocytogenes is a small, anaerobic, Gram-positive bacillus found in soil and decaying vegetation, and the fecal matter of some mammals. It is a contaminant in raw milk, cheese, fish, poultry and some vegetables. Prosthetic valve endocarditis caused by *Listeria* is uncommon (1,2). *Listeria* endocarditis generally presents in a subacute manner, with fever followed by symptoms of cardiac insufficiency (dyspnea, edema and a heart murmur). Embolic phenomena such as petechiae, purpura and rashes may be seen (3). Spyrou et al (4) reviewed 58 cases reported up to 1997 and found the mean patient age to be 53 years, with men outnumbering women (1.6:1). Predisposing factors for *Listeria* endocarditis included a history of underlying structural heart disease (most commonly a prosthetic valve or rheumatic valve disease) or coronary artery disease (5). In this case series, overall mortality was 37% and was nonsignificantly higher in patients with a prosthetic valve (41% versus 31%). There was no survival difference between medical therapy alone versus surgical therapy plus antibiotics, although the conclusions of this study are limited by its retrospective observational design.

Mycotic arterial aneurysms are an uncommon complication of *Listeria* infection, with only 18 cases reported in the literature (6). Another review (7) found that one-third of these infections involved vascular grafts. Risk factors for *Listeria*-associated vascular infections included atherosclerosis,

hypertension and diabetes. Only one case was associated with concurrent endocarditis.

The pseudoaneurysm in our patient was thrombosed via hepatic arterial catheterization, and the patient completed six weeks of ampicillin plus gentamicin. He was evaluated by the cardiac surgery service, but his high operative risk precluded surgical intervention. The patient's symptoms improved, and he was eventually discharged home. He was thereafter given amoxicillin 500 mg three times daily as chronic suppressive therapy. This patient's presentation was a rare combination of *Listeria* endocarditis with hemobilia and a microcytic anemia associated with a hepatic artery pseudoaneurysm.

REFERENCES

1. Makaryus AN, Yang R, Cohen R, Rosman D, Mangion J, Kort S. A rare case of *Listeria monocytogenes* presenting as prosthetic valve bacterial endocarditis and aortic root abscess. *Echocardiography* 2004;21:423-7.
2. Fernandez Guerrero ML, Rivas P, Rabago R, Nunez A, de Gorgolas M, Martinell J. Prosthetic valve endocarditis due to *Listeria monocytogenes*. Report of two cases and reviews. *Int J Infect Dis* 2004;8:97-102.
3. Speelevelt E, Muyldermans L, Van den Bruel A, Dhondt E, Gordts B, Van Landuyt HW. Prosthetic valve endocarditis due to *Listeria monocytogenes*. A case report with review of the literature. *Acta Clin Belg* 1994;49:95-8.
4. Spyrou N, Anderson M, Foale R. *Listeria* endocarditis: Current management and patient outcome – world literature review. *Heart* 1997;77:380-83.
5. Carvajal A, Frederiksen W. Fatal endocarditis due to *Listeria monocytogenes*. *Rev Infect Dis* 1988;10:616-23.
6. Oehler RL, Elko LM, Gompf SG. Acute graft thrombosis and aortic root pseudoaneurysm associated with *Listeria* bacteremia: A case report and review of the literature. *Infect Dis Clin Prac* 2004;12:345-9.
7. Heikkinen L, Valtonen M, Lepantalo M, Saimanen E, Jarvinen A. Infrarenal endoluminal bifurcated stent graft infected with *Listeria monocytogenes*. *J Vasc Surg* 1999;29:554-6.