Confirmed Mycoplasma pneumoniae Endocarditis

To the Editor: In Rosario, Argentina, during June 2005, a 15-year-old boy was hospitalized because of a 2-month history of fever. The patient had no history of cardiac disease or intravenous drug use. The results of the physical examination and the laboratory tests were within normal limits, except for an increased leukocyte count (14,000/μL) with 68% neutrophils.

Transeosaphagic echocardiography showed mural vegetation on the right ventricle (30 mm × 20 mm) with no valve involvement. The patient was empirically treated with penicillin, gentamicin, and ceftriaxone. After treatment failed to produce a response, blood was submitted for culture for mycobacteria, brucellae, bartonellae, molds, and yeasts. BacT/ALERT bottles (bioMérieux, Durham, NC, USA), Hemoline performance biphase medium (bioMérieux, Marcy L’Etoile, France), lysis centrifugation, and homemade culture broth were used. All culture results were negative. Results of PCR performed on serum for Mycoplasma pneumoniae, Chlamydia pneumoniae, and Bartonella henselae. Serologic tests for immunoglobulin (Ig) G and IgM were conducted by indirect immunofluorescence assay (slides from Bion; Des Plaines, IL, USA) and fluorescein-labeled anti-human IgG and IgM (bioMérieux). For the IgM assay, the serum was pretreated with IgG/RF stripper (The Binding Site Ltd., Birmingham, UK). The titers for M. pneumoniae IgG and IgM antibodies were 2,048 and 160, respectively. Blood cultures were then subcultured in homemade Hayflick medium. These samples were incubated in 5% CO2 in a 37°C incubator and examined 2×/week for typical M. pneumoniae colonies.

After 9 days of incubation, Hayflick agar plates inoculated with aliquots taken from homemade blood culture bottles (bact extract 5 g, yeast extract 5 g, peptone 10 g, glucose 2 g, NaCl 5 g, Na2HPO4 2.5 g, sodium heparin 10,000 U, distilled water to 1,000 mL, pH 7.6) showed colonies consistent with M. pneumoniae. No isolates were recovered from commercial blood culture bottles.

Result of hemolysis test with sheep blood was positive. The isolate was definitively identified as M. pneumoniae after P1 cytadhesin gene amplification by nested PCR, with primers P1-40, P1-178, P1-285, and P1-331 (1).

After mycoplasma were was isolated, intravenous clarithromycin was added to ceftriaxone; the ceftriaxone was discontinued 1 week later. The patient’s clinical condition improved, and he was discharged 3 weeks after bacteriologic diagnosis with a treatment regimen of oral levofloxacin. After 6 months of treatment, the vegetation was reduced with no evidence of calcification.

Mycoplasma spp. have rarely been associated with endocarditis; until 2007, reports of only 8 cases had been published (2–8). The patient described herein had no underlying medical problems or immunodeficiency. Results of lymphocyte subsets, immunoglobulin titers, response to tetanus toxoid, and pneumococcal capsular polysaccharide were within reference ranges.

Cases of culture-negative endocarditis are not routinely investigated for mycoplasmas; however, the role of these microorganisms as a cause of endocarditis might be underestimated. Mycoplasma spp. cannot be detected by Gram stain and are difficult to isolate in bacteriologic culture media. Commercial blood culture broths that use sodium polyanetholsulfonate as an anticoagulant are not suitable for growing these microorganisms (9). Other diagnostic approaches include the detection of specific DNA sequences or the use of broad-range eubacterial primers in cardiac tissue (6). In the patient reported here, the clinical sample (vegetation) was not available for diagnostic M. pneumoniae gene amplification. We failed to detect M. pneumoniae by PCR-mediated gene amplification directly from whole blood and plasma. Theoretically, specific PCR should be more sensitive than culture, as shown in respiratory specimens, but to date attempts to detect M. pneumoniae in blood by PCR have not been successful. The bacterial load in blood may have been too low to detect the amplified product by ethidium bromide–stained gel electrophoresis. The larger volume of blood used and the preincubation in broth with yeast extract for 7 days could have improved the recovery by culture. Another cause of reduced PCR sensitivity may have been the use of frozen samples.

This case of endocarditis caused by M. pneumoniae was confirmed by culture and occurred in a patient with no previous heart disease. Further studies are needed to evaluate the real incidence of M. pneumoniae as...
a cause of endocarditis as well as the occurrence of mycoplasma bacteremia in the absence of underlying infection of the endocardium.

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References

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