by a dot blot hybridization with a 289-bp digoxigenin-labeled probe internal to the amplified DNA fragment. Aqueous humors from patients investigated for ocular syphilis were used as negative controls. The specific *Leptospira* 16S rRNA gene fragment was detected by dot blot hybridization (figure 1) in the aqueous humor of our patient but not in serum and urine samples. The concentration of leptospires in aqueous humor was estimated at 10^3/mL.

Bilateral or unilateral uveitis [4], cotton wool spots [5], and necrotic retinitis [6], with or without systemic symptoms, have been related to leptospiral infection. These diagnoses were based on history of systemic illness, evidence of specific antibodies in serum, and exclusion of other possible causes. This first report of PCR diagnosis of ocular leptospirosis demonstrates the possibility of a positive diagnosis of ophthalmologic complications in a disease in which the pathogenesis is still misunderstood.

F. Merien, P. Perolat, E. Mancel, D. Persan, and G. Baranton

Laboratoire des Leptospires, Institut Pasteur, and Service d'Ophtalmologie, Centre Hospitalier Territorial, Nouméa, New Caledonia; Unité de Bactériologie Moléculaire et Médicale, World Health Organization Collaborating Center for Leptospirosis, Institut Pasteur, Paris, France

References

1. Heath CWJ, Alexander AD, Galton MM. Leptospirosis in the United States: analysis of 483 cases in man. N Engl J Med 1965;273:857–64, 915–22.
2. Faine S. Guidelines for leptospirosis control. Geneva: World Health Organization, 1982:41–6.
3. Perolat P, Reeve PA. First evidence of leptospirosis in Vanuatu. Trans R Soc Trop Med Hyg 1992;86:557–9.
4. Gutman I, Walsh JB, Knapp AB. Cotton-wool spots as a sign in leptospirosis (Weil's disease). Ophtalmologica 1983;187:133–6.
5. Barkay S, Garzozi H. Leptospirosis and uveitis. Ann Ophtalmol 1984;16:164–8.
6. Karsenti G, Navarre L, Malan P, Mercadier B, Millet E, Esmenjaud E. A propos de deux cas de rétinite nécrosante aigu bilatérale: l'un au cours d'une leptospirose ictérohémorragique, l'autre par atteinte auto-immune probable ("bilateral acute retinal necrosis"). Bull Soc Ophtalmol France 1985;4:501–10.
7. Van Eys GJJM, Gravekamp C, Gerritsen MJ, et al. Detection of leptospires in urine by polymerase chain reaction. J Clin Microbiol 1989;27:2258–62.
8. Mérien F, Amouriaux P, Perolat P, Baranton G, Saint-Girons I. Polymerase chain reaction for detection of *Leptospira* spp. in clinical samples. J Clin Microbiol 1992;30:2219–24.
9. Boom R, Sol CJA, Salimans MMM, Jansen CL, Wertheim-van Dillen PME, van der Noordaa J. Rapid and simple method for purification of nucleic acids. J Clin Microbiol 1990;28:495–503.

The Digestive Tract Is a Major Site for *Acinetobacter baumannii* Colonization in Intensive Care Unit Patients

Colleagues—*Acinetobacter baumannii* is widespread in nature [1] and is carried by many healthy people, especially on the skin [2]. Moreover, the organism is increasingly being associated with human disease, particularly in hospital settings among debilitated patients and in intensive care units (ICU) [3]. It is frequently found in the respiratory tract; however, the digestive tract has not been thought to be a major colonizing site [3]. Recently, in an eight-bed ICU, we were confronted with an outbreak with *A. baumannii* that was sensitive only to ticarcillin, colistin, and imipenem. The index case was a 65-year-old woman, who was referred from another hospital 3 weeks before the outbreak began.

For 32 weeks, we assessed patients for colonization with *A. baumannii* beginning with admission and then weekly with rectal swabs and tracheal aspirates. A total of 170 patients was tested. *A. baumannii* was present on rectal swabs and tracheal aspirates of 41 patients (24%; 45% of ICU patients are hospitalized >7 days). All of the isolates had the same susceptibility to antimicrobials. Sixteen patients were admitted from other units with digestive tract colonization with *A. baumannii* and 25 acquired this organism in the ICU despite traditional infection control measures [4] (isolation of colonized and infected patients and improvement of hand washing and asepsis). Among these 25 patients, the digestive tract (as assessed by rectal swabs) was the first site colonized in 17 cases. Of the 8 remaining patients, tracheal colonization occurred at the time of (7 patients) or before digestive colonization (1 patient). Moreover, during the same period, no environmental contamination with *A. baumanii* was found on patient care equipment (assessed during weeks 7 and 18).

A. baumannii infection, according to the Centers for Disease Control definition, [5], occurred in 11 patients and was considered to be directly responsible for the deaths of 3 patients (2 nosocomial pneumonias, 1 catheter-related septicemia). Digestive tract colonization (rectal) with multiresistant *A. baumannii* was present before (12 cases, 9 patients) or at the time of infection (2 cases, 2 patients).

Although we did not determine oropharyngeal and cutaneous colonization, these results suggest that the digestive tract was an important reservoir for *A. baumannii* in ICU patients.

The failure to prevent transmission from patient to patient by careful asepsis and improved hand washing indicates the need for strategies to decrease the numbers of *A. baumannii* in colonized patients. For this purpose, because the digestive tract seemed to be a major colonization site, selective digestive decontamination with topical antimicrobials [6] might be considered as a means to decrease *A. baumannii* cross-colonization, making the routine infection control measures more effective in the management of ICU outbreaks.

Jean-François Timsit, Valerie Garrait, Benoit Misset, Fred W. Goldstein, Bertrand Renaud, and Jean Carlet

Intensive Care Unit and Department of Microbiology, Hôpital Saint Joseph, Paris, France

Reprints or correspondence: Dr. Jean-François Timsit, Service de réanimation polyvalente, Hôpital St. Joseph, 7 rue Pierre Larrousse, 75014 Paris, France.

The Journal of Infectious Diseases 1993;168:1336–7

0022–1899/93/6805–0053$01.00

References

1. Baumann P. Isolation of *Acinetobacter* from soil and water. J Bacteriol **1968**;96:39–42.
2. Taplin D, Rebell G, Zaias N. The human skin as a source of Mima-Herellea infections. JAMA **1963**;186:952–5.
3. Johnson DR, Love-Dixon MA, Brown WJ, Levine DP, Downes FP, Hall WN. Delayed detection of an increase in resistant *Acinetobacter* at a Detroit hospital. Infect Control Hosp Epidemiol **1992**;13:394–8.
4. Weinstein RA, Kabins SA. Strategies for prevention and control of multiple drug resistant nosocomial infection. Am J Med **1981**;70:449–54.
5. Garner JS, Jarvis WR, Emori TG, Horan TC, Hughes JM. CDC definitions for nosocomial infections—1988. Am J Infect Control **1988**; 16:128–40.
6. Van Saene HKF, Stoutenbeek CC, Stoller JK. Selective decontamination of the digestive tract in the intensive care unit: current status and future prospects. Crit Care Med **1992**;20:691–703.

Rapid Identification of *Mycobacterium avium-intracellulare* Complex Strains: Clinical Practice Evaluation of DT6 and DT1 Probes

Colleagues—*Mycobacterium avium* is the most frequent cause of disseminated bacterial disease in the later stages of AIDS. Because of the severity of the infection, the increasing incidence over the last 5 years, and the availability of effective treatment, a rapid and reliable detection method would be helpful. The procedure combining radiometric liquid culture and nonradioactive probe technology greatly contributes to more rapid identification, which is easily used in clinical laboratories. However, commercially available probes specific for rRNA do not allow the detection of all clinical isolates of *M. avium* [1–3]. We recently isolated two sequences, DT6 and DT1, specific for *M. avium* and *Mycobacterium intracellulare*, respectively [4], and developed polymerase chain reaction (PCR) tests based on the amplification of these sequences.

Forty-one mycobacterial strains and 121 various biologic specimens were cultured (Bactec 460 TB; Becton Dickinson, Cockeysville, MD); positive cultures were subsequently identified by conventional methods. When a growth index of >500 was reached, DNA was extracted from 1-mL aliquots from vials and analyzed by PCR using two sets of primers: AV1 (5′-GGCCCGATGCGACGTCGAGA-3′)/AV2 (5′-GCGCAACTGCGCTTCGTCGA-3′) and IN38 (5′-GAACGCCCGTTGCTGGCCATTCACGAGGAG-3′)/IN41 (5′-GCGCAACACGGTCGGACAGGCCTTCCTCGA-3′) derived from DT6 and DT1, respectively. The amplified products were hybridized with acetylaminofluorene-labeled DT6 or DT1 probes.

The 22 strains biochemically identified as members of the *Mycobacterium avium-intracellulare* complex (MAC) were assigned to *M. avium* or *M. intracellulare* on the basis of PCR results (table 1). None of the 19 mycobacterial strains other than MAC (2 *Mycobacterium fortuitum*, 3 *Mycobacterium bovis* [1 was strain bacille Calmette-Guérin], 5 *Mycobacterium chelonae*, 3 *Mycobacterium xenopi*, 2 *Mycobacterium terrae*, 1 *Mycobacterium peregrinum*, and 3 *Mycobacterium kansasii*) reacted with any of the primer pairs.

All 88 MAC-containing specimens were positive by PCR using DT6-derived primers (table 1) as well as 4 additional specimens that contained mixed cultures of MAC associated with *Mycobacterium simiae* (3) or *Mycobacterium scrofulaceum* (1). Such mixed cultures have been reported from AIDS patients [5, 6].

Table 1. Comparison of polymerase chain reaction (PCR) with the standard bacteriologic method.

Samples	Biochemical identification (*n*)	PCR-positive with DT6 probe	PCR-positive with DT1 probe
41 strains	MAC (22)	21	1
	Other mycobacteria (19)	0	0
121 specimens*	MAC (88)	88	0
	Mixed cultures (4)	4	0
	Other mycobacteria (29)	0	0

NOTE. MAC, *Mycobacterium avium-intracellulare* complex.
* Blood (82), sputum (9), gastric aspirate (10), bronchial aspirate (6), tissue biopsy (5), urine (3), synovial fluid (1), pleural fluid (1), peritoneal fluid (1), bone marrow (1), lymph node puncture (1), and pus (1).

The remaining 29 specimens positive for mycobacterial growth but negative by PCR produced isolates consisting of 19 *Mycobacterium tuberculosis*, 2 *Mycobacterium gordone*, 2 *M. kansasii*, 2 *M. scrofulaceum*, and 4 unidentified strains. These latter isolates were obtained from sequential blood cultures from the same AIDS patient.

In conclusion, we found that the PCR assay based on the use of the DT6- and DT1-derived primers offers a practical method for the rapid identification of *M. avium* and *M. intracellulare* and can be successfully used at an early stage in isolation of primary clinical samples.

Dominique Thierry, Stéphane Baugé, Jean-Dominique Poveda, Véronique Vincent, and Jean-Luc Guesdon

Laboratoire de Prédéveloppement des Sondes, Centre de Biologie Médicale Spécialisée, Centre de Référence des Mycobactéries, Institut Pasteur, Paris, France

References

1. Lebrun L, Espinasse F, Poveda JD, Vincent Lévy-Frébault V. Evaluation of nonradioactive DNA probes for identification of mycobacteria. J Clin Microbiol **1992**;30:2476–8.
2. Varnerot A, Clément F, Vincent-Lévy-Frébault V. Evaluation of nonradioactive DNA probes for the identification of *Mycobacterium avium* complex. Methods Mol Cell Biol **1992**;3:198–203.
3. Woodley CL, Floyd MM, Silcox VA. Evaluation of syngene DNA-DNA

Reprints or correspondence: Dr. Jean-Luc Guesdon, Institut Pasteur, 25 rue du Docteur Roux, 75724 Paris Cedex 15, France.

The Journal of Infectious Diseases 1993;168:1337–8

0022–1899/93/6805–0054$01.00