merase chain reaction to amplify the 5′ end of the 16S rRNA gene using the primers 8F and 806R, as published [6]. A fragment of approximately 800 bp was obtained and sequenced. The sequence obtained displayed 100% identity over 749 bp (excluding the primers) to the 16S rRNA gene of *Mycoplasma hominis* (GenBank accession number, AJ002268), allowing an unambiguous identification of the microorganism.

This case confirms the capacity of *Mycoplasma hominis* to cause generalized infections in immunosuppressed individuals. The patient described here was at high risk, because he had received a combined transplantation of the kidney and pancreas due to terminal-stage type I diabetes. This case also illustrates the difficulties encountered in the microbiology laboratory in obtaining an appropriate diagnosis, due to both the particular circumstances of the analysis of *Mycoplasma* spp. and the rare incidence of systemic infection with these pathogens.

In retrospect, the bacteria most likely would also have been identified directly in the patient's specimens by culture on arginine-containing *Mycoplasma* media or by a *Mycoplasma hominis*-specific polymerase chain reaction. However, due to the low incidence of systemic infection with *Mycoplasma hominis*, we feel that such a procedure is too expensive and therefore not feasible for routine work. Instead, we used two relatively uncommon techniques to identify the bacteria. First, an agar diffusion test was set up directly from the specimen material to overcome the problems of subculturing the colonies grown after primary culture. This test yielded an antibiogram typical for *Mycoplasma hominis*. Second, we employed a eubacterial polymerase chain reaction, a technique which is being used increasingly in microbiology laboratories. This report confirms the usefulness of these techniques in the detection and identification of a bacterial pathogen in a situation in which conventional diagnostic examination is hampered by unusual growth requirements.

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Reversible Acute Hydrocephalus Complicating *Listeria monocytogenes* Meningitis

J.P. Frat, A. Veinstein, M. Wager, C. Burucoa, R. Robert

Complications due to *Listeria monocytogenes* meningitis include brain stem damage, impairment of consciousness, generalized or focal seizures and brain abscess [1, 2]. Acute obstructive hydrocephalus is well recognized as a complication of tuberculous meningitis, particularly in children [3]. In the present case, acute hydrocephalus was an unusual early complication of *Listeria monocytogenes* meningitis.

A 72-year-old female patient with a history of chronic lymphoid leukemia was admitted for treatment of subacute meningitis. She had a 3-day history of fever, headache and anorexia. On admission to the emergency room, her clinical examination showed nuchal rigidity. Her temperature was 40 °C. Cerebrospinal fluid analyses showed the following: leukocyte count, 264/mm^3; erythrocyte count, 173/mm^3; protein, 6.8 g/l; glucose, 0.4 g/l. Gram stain was negative. Additional laboratory values were as follows: hemoglobin, 13 g/dl; leukocyte count, 46.10^9/l (neutrophils, 8.10^9/l); platelet count, 159,000/mm^3; serum urea, 7.3 mmol/l; natremia, 132 mmol/l; kalemia, 3.4 mmol/l; and C-reactive protein, 255 mg/l.

Empirical antibiotic therapy including intravenous cefotaxime, amoxicillin and gentamicin was started

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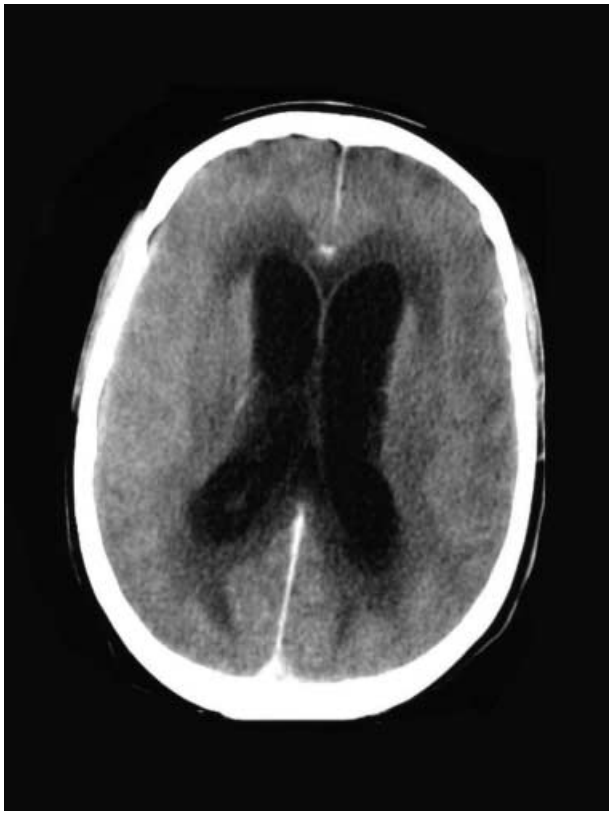

Fig. 1 Initial cranial computed tomographic scan, after seizures, showing a normal gray-white differentiation and no abnormality of the ventricle system

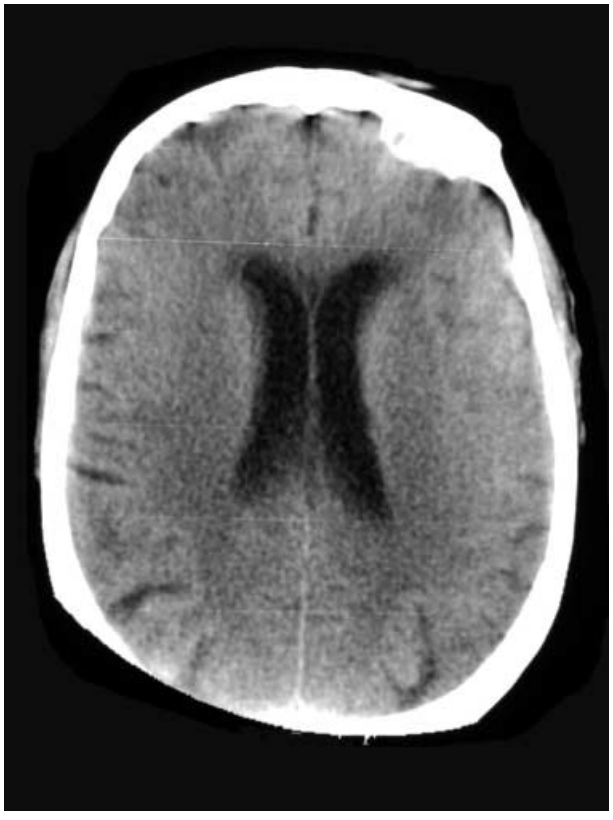

Fig. 2 Cranial computed tomographic scan on hospital day 10, showing hydrocephalus characterized by prominent lateral ventricles and cerebral edema

immediately. A few hours after admission, the patient had several seizures and was referred to the intensive care unit. She was intubated and mechanical ventilation was initiated. She received midazolam and fentanyl as sedation. A computed tomographic scan of the brain was normal (Fig. 1). Blood cultures taken upon admission and cerebrospinal fluid culture subsequently grew *Listeria monocytogenes*. Sedative therapies were discontinued on day 3, but the patient remained unconscious. On day 10, she did not react to stimulation, her reflexes were absent and she had no Babinski's sign. Her pupils were normal and reactive to light. An electroencephalogram showed no asymptomatic seizures. A second computed tomographic scan of the brain was performed and showed prominent temporal horns with effacement of the basal cisterns and a decrease of grey-white differentiation due to early brain swelling and developing obstructive hydrocephalus (Fig. 2). The contrast study showed no focal lesion. A ventriculoperitoneal shunt was inserted. She improved progressively and could be weaned from the ventilator 8 days after surgery. Neurological examination showed normal consciousness, mild disorientation and moderate left hemiparesis. She was discharged from the intensive care unit on day 25 and from the hospital on day 45. She had regained her premorbid level of functioning after 5 months of rehabilitative care.

Complications due to *Listeria monocytogenes* meningitis include impairment of consciousness (varying from confusion to coma), generalized or focal seizures and brain abscess [1, 2]. In a recent study mixing personal observations and reported cases from Medline research, brain abscess and hydrocephalus were observed on computed tomographic scans in 19% of patients with central nervous system infections related to *Listeria monocytogenes* [1]. However, in this report, the respective frequencies of abscesses and hydrocephalus were not analyzed. In a previous series that focused on brain stem encephalitis caused by *Listeria monocytogenes*, hydrocephalus was apparent in only 1 of the 35 computed tomographic scans of the brain performed [4]. Thus, identified cases of hydrocephalus complicating *Listeria* meningitis or encephalitis have been reported infrequently [5–8]. Hydrocephalus was associated with spinal cord compression in two cases [5, 7] and with intramedullary brain stem cyst trapping IV ventricle in one case [8]. In these reported cases, hydrocephalus occurred at different times ranging from a few weeks [5, 8] to over 1 year [7] after the onset of the

illness. In the present case, acute hydrocephalus occurred less than 10 days after admission. Neither cyst nor abscess was shown on the computed tomographic scan. Ventricular drainage induced rapid improvement, as in the previously reported cases [7].

Acute obstructive hydrocephalus is well recognized as a complication of tuberculous meningitis, occurring in subacute or chronic phases [3]. In cases of meningitis causing hydrocephalus, several mechanisms can be involved, such as blockage of the flow of cerebrospinal fluid by leptomeningeal inflammation or the obliteration of the subarachnoid space by meningeal exudate. During listeriosis, the blockage can also be due to subarachnoid cyst development, which has been witnessed in some postmortem examinations [4].

In conclusion, patients with *Listeria monocytogenes* meningitis exhibiting a persistent alteration of consciousness should have brain imaging performed urgently to exclude obstructive hydrocephalus, which can be resolved rapidly.

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Bacteremia Caused by Multiply Resistant *Corynebacterium urealyticum*: Six Case Reports and Review

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Corynebacterium urealyticum, previously known as *Corynebacterium* group D2, was considered in 1984 by Weaver and Hollis to be a nitrate-negative variant of *Corynebacterium pseudodiphtheriticum* but was later recognized as a new species in 1992 [1]. In 1985 Soriano et al. [2] published the first study relating *Corynebacterium urealyticum* to urinary tract infection (4 cases of encrusted cystitis). Since then, this organism has been recognized as a uropathogen [3], and urease activity has been shown to play a fundamental role in the pathogenesis of urinary tract infections. Besides its tropism for the urinary tract, other characteristics of *Corynebacterium urealyticum* include its capacity for hydrolyzing Tween 80, its inability to produce acid from carbohydrates, and its resistance to many antimicrobial agents [1–4].

Although *Corynebacterium urealyticum* has been recorded only rarely as a cause of nonurinary infection in humans, it has been isolated from cases of pneumonia, peritonitis, cardiac valve infection, osteomyelitis, infection of postoperative wounds, and soft tissue necrosis [5]. We present here six cases of bacteremia caused by multiply resistant *Corynebacterium urealyticum*, four of which occurred in patients who had no evidence of pathology in the urinary tract. Only eight other cases of *Corynebacterium urealyticum* bacteremia without urinary tract infection have been described previously.

All patients were hospitalized in a general hospital in Leon, Spain, between January 1994 and December 1998. Blood, extracted by venal puncture, was processed by an automated blood culture system (BacT/Alert; Organon-Teknika, USA) in accordance with the manufacturer's recommendations. Organisms were isolated in blood agar after 48 h of aerobic incubation. Small colonies (0.5–1 mm in diameter), whitish,

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