Bacteremia and Pyelonephritis Caused by *Lactobacillus jensenii* in a Patient with Urolithiasis

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Key words: Lactobacillus, lactobacillemia, pyelonephritis, urolithiasis, bacteremia

IMAJ 2008;10:164–165

Lactobacillus is a common inhabitant of the human gastrointestinal and genitourinary tract. Some species are utilized as probiotic bacteria and were found effective in treating diarrhea and candidal vaginitis [1,2]. The clinical significance of Lactobacillus isolated from normally sterile sites is controversial: some authors regard it as a contaminant without clinical significance while others consider it a true pathogen [1]. Despite the opposing views, Lactobacillus has been implicated in severe infections such as bacteremia, endocarditis and vascular graft infection. The overall mortality rate in bacteremia is about 30% [1]. Lactobacillus bacteremia of renal origin is very unusual, since its presence in the urogenital tract is considered a protective factor against pathogenic bacterial colonization and even infection [3,4].

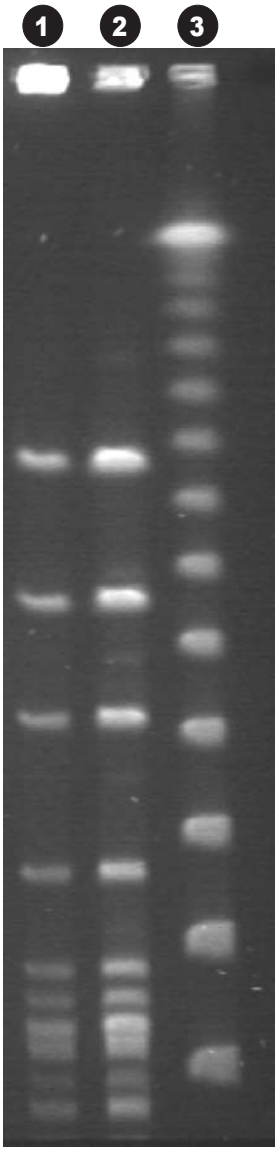
Patient Description

A 59 year old woman was hospitalized due to fever, chills and left lumbar pain radiating to the inguinal area for 2 days. Her history revealed follicular lymphoma of the breast (grade I) 1 year previously that was treated by conservative surgery, as well as diabetes mellitus type 2 and arterial hypertension (both well controlled). There was no prior ingestion of yogurt or any Lactobacillus products. Following the finding of macroscopic hematuria, abdominal ultrasound, computed tomography and intravenous pyelography were performed. Imaging studies showed moderate left hydronephrosis due to a stone (6.5 x 8.2 mm) in the left distal ureter. On admission, fever was 40°C, pulse 117 beats per minute and blood pressure 176/91 mmHg. Laboratory tests showed the following: white blood cell count 3720 cells/ml (78% N), hemoglobin 9.2 g/dl; urinalysis showed many red blood cells, < 30 white blood cells, no nitrites, pH 6, gravidity 1020, and sediment revealed uric acid crystals. A stent to the left distal ureter was inserted by retrograde uretherography after extracting the stone, and intravenous gentamicin was started. Urine culture revealed > 100,000 colony-forming units of Lactobacillus. Blood cultures (two sets) prior to the procedure demonstrated *Lactobacillus* sp. (minimum inhibitory concentration to penicillin 0.25 µg/ml). High dose ampicillin was given for 14 days. All subsequent urine and blood cultures after the antibiotic was started were negative. The patient's condition improved and she was discharged from hospital. At follow-up a month later she was healthy and the urine culture was sterile.

Molecular biology identified *Lactobacillus jensenii* in both isolates (blood and urine culture). Bacterial DNA was extracted and 16rRNA gene was amplified by polymerase chain reaction as previously described. Both resulting amplicons were sequenced and identity was determined using Blast analysis software (Blast;http://www.ncbi.nlm.gov/Blast). In addition, pulse-field electrophoresis showed that both isolates were identical [5] [Figure].

Comment

Lactobacillus bacteremia is an uncommon clinical entity occurring in patients with severe underlying illnesses. Most of the patients described received prior anti-



Pulse-field gel electrophoresis pattern of both isolates
1. Blood isolate
2. Urine isolate
3. Marker

biotic, mainly cephalosporins or vancomycin, which may cause selection of the organism [1]. Our patient is exceptional since she did not receive antimicrobials during the preceding 6 months.

Only two cases of Lactobacillus bacteremia of renal origin were previously reported. The first was associated with nephrolithiasis and recovered following nephrectomy and antimicrobial treatment [3]. The second suffered from emphysematous pyelonephritis, underwent nephrectomy due to clinical deterioration, and died [4]. In our patient: the presence of urolithiasis causing transient urinary flow obstruction probably enabled Lactobacillus to become a true pathogen. In contrast to previous cases, she did not undergo nephrectomy and recovered on antibiotic treatment.

The debate regarding the clinical significance of Lactobacillus is ongoing. It is considered a true pathogen in the presence of two sets of positive blood cultures or isolation of the organism from blood, and another site of clinical infection [1,3]. To our knowledge, this is the third case of lactobacillemia from a renal source reported in the literature; blood and urine cultures grew the same *Lactobacillus jensenii*, supporting lactobacillus bacteremia as a true infection. Despite the difficulty in evaluating the presence of *Lactobacillus* sp. in cultures as a pathogen, the identification of *Lactobacillus* sp. in blood cultures in an immunocompromised host or in patients with predisposing factors such as urolithiasis warrants prompt evaluation with a high index of suspicion [4].

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