

CASE REPORTS

LACTOBACILLUS SPECIES AS A CAUSE OF URINARY TRACT INFECTION

AKTER M¹, JANNNAT R², NOVA TT³

Abstract

Lactobacillus is a genus of Gram-positive, facultative anaerobic or microaerophilic, rod-shaped, non-spore-forming bacteria.¹ In human, they constitute a significant component of microbial flora at a number of body sites, such as the digestive system, urinary system, and genital system. *Lactobacillus* species are normally a major part of the vaginal microbial flora.^{2,3,4} As a normal bacterial flora of the vagina the organisms are typically considered contaminants when cultured from urine specimens of female patients. Here we describe the case of a female patient with chronic pyuria and urinary tract symptoms in which *Lactobacillus* spp. was determined to be the causative microorganism. After proper treatment the patient gets well soon.

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Case Report

A seventy years old lady admitted to Asgar Ali Hospital with incontinence of urine, recurrent peripheral vertigo and recurrent UTI. She had history of subtotal thyroidectomy, osteoporosis of knee joint and unable to talk and walk and several other co-morbidities including diabetes mellitus, hypertension, dementia and hyperlipidemia. Data was collected from HMIS Internet support of our hospital, the patient took an executive visit for her UTI in January 8th 2017, her urine revealed the evidence of UTI and culture yielded the growth of *Esch.coli* >10⁵CFU/ml which was not an ESBL, and was sensitive to other drugs. In 18th of the same month the patient came to OPD, that time she complained lower abdominal pain and incontinence and treated with Meropenem. Her urine examination was done on 25th January 2017, and urine still revealed 40-50 pus cells/HPF. In 22nd February, patient again came to OPD with same complains. Her urine had 8-10 pus cells and culture yielded *Klebsiella pneumoniae* 105 CFU/ml and which was a CRE, she treated with nitrofurantoin. She visited again to OPD in March 2017, *Ecsh.coli*

and *Enterobacter* spp were isolated from her urine in that occasion, both having 104 CFU/ml, *Enterobacter* spp. was ESBL positive. After that she visited to OPD for 2 occasions in month May and 10th November with same complains and same number of pus cells but culture yielded no growth and her symptoms such as nocturia, increase frequency and dysurea did not resolved. In November 19th of 2017 she came to emergency, was not vitally stable then immediately transferred to ICU. Before starting of antibiotics urine was sent for RME, Gram stain and culture and sensitivity. After sending the sample, injection ceftriaxone was started. Her urine showed plenty of pus cells and Gram stain revealed plenty of large Gram positive bacilli both in centrifuge and uncentrifuge urine. Due to confusion regarding organism, after removal of the catheter, re-catheterization had been done, and sample was collected from new catheter after proper irrigation with normal saline and maintaining of strict aseptic precaution. Urine examination such as RME, Gram stain and culture were repeated. Same findings were observed.

1. Prof. Dr. Mursheda Akter, Consultant, Microbiology Laboratory Medicine, Asgar Ali Hospital, Dhaka
2. Dr. Rubeyatul Jannnat, Specialist Laboratory Medicine, Asgar Ali Hospital, Dhaka
3. Dr. Tasfia Tasnim Nova, MD Microbiology Student, BIRDEM, Dhaka

Correspondence: Prof. Dr. Mursheda Akter, Consultant, Microbiology Laboratory Medicine, Asgar Ali Hospital, Dhaka, Mobile: 01718258893, E-mail: drmurshedaakter@gmail.com

Urine was inoculated in blood, Mc Conkey's and chocolate agar media .After 48 hours of incubation with 5% CO₂, pure faint alpha hemolytic colonies appear on blood and chocolate agar media and colony count was 10⁵ CFU/ml there was no mixed growth and no growth on Mc Conkey's agar media. Gram stain was done from the colonies, Gram positive large bacilli appeared which was catalase negative , oxidase negative. On the basis of these characteristics together and very characteristics Gram stain morphology, the organisms was presumptively identified as a *Lactobacillus* species, which was sensitive to penicillin, ampicillin, ceftriazone, clindamycin, linezolid, rifampicin and gentamycin, and resistant to tetracycline, cefixime, meropenem, cotrimoxazole, nitrofurantoin, vancomycin , ciprofloxacin and levofloxacin. Lactobacilli spp. are phenotypically resistant to vancomycin. Patient was treated with injectable ceftriaxone followed by oral Cefixime. On 25/11/17 urine RME, Gram stain and culture were done, revealed 5-6/ pus cells in per HPF and urine Gram stain and culture did not show any evidence of organisms.

Discussion

Urinary tract infections caused by *Lactobacillus* spp. are exceedingly uncommon. Our review of the literature revealed previously published case report of a 66-year-old diabetic male who developed acute renal failure and sepsis in a setting of ureteral obstruction. The patient's urine and blood yielded pure cultures of *Lactobacillus gasseri*, and following treatment with amoxicillin, the patient recovered fully⁵. Another report showed An 85 years old female with recurrent urinary tract infections, lastly lactobacilli was isolated from her urine which was also identified by bacterial 16S rRNA gene sequencing. Analysis of the isolate's 16S rRNA gene sequence revealed it to be *Lactobacillus debrueckii*.⁶ Lactobacilli are rod-shaped bacteria that are part of the intestinal and vaginal normal flora, and are usually considered beneficial because they produce vitamin K, the enzyme lactase that helps to digest dairy products, and anti-microbial substances, such as acidolin and acidophilin, which prevent the

growth and colonization of harmful bacteria. However, in rare cases, lactobacilli can cause serious infections of the bloodstream, urinary tract and internal organs, especially in immunocompromised individuals. Lactobacilli are generally considered to be of low virulence, rarely causing infection in humans. Blood stream infection has been described primarily in immunocompromised patients following dental manipulations, oral trauma, or endoscopic procedures and as a result of both gastrointestinal tract fistulas and gynecologic neoplasms^{7,8}. Subsequent development of endocarditis has been observed in bacteremic patients with preexisting valvular defects (8). Lactobacilli have also been shown to cause neonatal meningitis after vertical transmission of organisms from mother to infant during birth^{7,8}.


Antibiotics are the mainstay of treatment for lactobacillus infections. Penicillin is the common antibiotic used and can be administered orally or intravenously, depending on the condition of the patient. According to John Hopkins Point of Care Information Technology Center, the typical duration of penicillin treatment is about six weeks for infections of the bloodstream and heart⁹. Penicillin and its derivative ampicillin can also be used to treat lactobacilli infections of stomach. It is also important to note that almost all the strains of lactobacilli are resistant to vancomycin, so it is not recommended to treat lactobacilli infections⁹.

For patients with penicillin allergies, gentamicin is the alternate choice, and can be administered intravenously to patients with blood and heart infections. The John Hopkins Point of Care Information Technology Center also prescribes oral clindamycin to treat gum and teeth infections caused by lactobacilli species⁹.

Conclusion

In conclusion, we report a case of a patient with recurrent urinary tract infections in which *Lactobacillus* spp. was determined to be the etiologic agent. *Lactobacillus* spp. should not be regarded as simply a contaminant but as an unlikely, yet significant, cause of urinary tract inflammation and symptoms.

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