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Lactobacillus gasseri Bacteremia in a Nephrolithiasis Patient: An Unusual Finding

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ABSTRACT

Lactobacillus gasseri (*L. gasseri*) is an uncommon cause of bacteremia, typically associated with immunosuppression, probiotic use, or underlying chronic conditions. This case involves a 50-year-old obese female with nephrolithiasis and obstructive sleep apnea (OSA) who developed *L. gasseri* bacteremia, an unusual finding in the absence of significant chronic disease. The patient presented with right renal colic pain but was notably afebrile and denied nausea or vomiting. On admission, she was hemodynamically stable, had raised BMI, and exhibited right lower abdominal tenderness without rebound. A CT scan of the abdomen and pelvis confirmed the presence of calculi within the right mid-ureteric region, at the ureterovesical junction and in the lower pole of the right kidney. Blood culture was positive for *L. gasseri*. Unlike typical cases, the patient lacks common predisposing factors, suggesting a potential urinary tract origin or gut translocation mechanism. Given the absence of endocarditis or an identifiable nidus of infection, treatment considerations become more challenging. This case underscores the unusual occurrence of *L. gasseri* bacteremia in non-immunocompromised patients, prompting further investigation into its pathogenesis and the development of effective treatment approaches.

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Highlights

- ❖ *Lactobacillus gasseri* bacteremia is an exceptionally rare finding in immunocompetent individuals, with very few cases reported in the literature.
- ❖ The patient had no history of probiotic use, immunosuppression, or invasive procedures—challenging conventional risk profiles for *Lactobacillus* bloodstream infections.
- ❖ Urinary tract obstruction due to nephrolithiasis may have facilitated bacterial translocation, suggesting a novel pathogenic mechanism.
- ❖ The case was successfully managed with targeted antibiotic therapy alone, without surgical intervention or complications.
- ❖ This report underscores the importance of considering anatomical abnormalities when interpreting unexpected blood culture results involving low-virulence organisms.

Introduction:

L. gasseri is a facultative anaerobic, gram-positive rod that resides in the gastrointestinal and genitourinary tracts as part of the normal flora. It is generally considered non-pathogenic and is frequently dismissed as a contaminant when isolated from clinical specimens. However, under certain conditions, particularly in immunocompromised individuals or those with disrupted mucosal barriers, it has been implicated in serious infections including bacteremia, endocarditis, liver abscesses, and urinary tract infections (Ramos-Coria et al., 2021). Bacteremia due to *L. gasseri* is exceedingly rare, especially in immunocompetent individuals without recent probiotic use or surgical instrumentation. Most reported cases in Ramos-Coria et al (2021) and Rasul et al. (2012) mentions about the involvement of patients with diabetes mellitus, malignancy, or recent urogenital procedures. The pathogenesis in such cases is often attributed to translocation from the gastrointestinal tract or ascending infection from the genitourinary tract.

We report a unique case of *L. gasseri* bacteremia in a morbidly obese woman with nephrolithiasis and obstructive sleep apnea, without other chronic systemic illnesses or immunosuppressive conditions. The absence of fever, urinary symptoms, or identifiable infectious nidus challenges

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conventional diagnostic and therapeutic paradigms, underscoring the need for heightened clinical awareness and individualized management strategies.

Case Presentation

A 50-year-old morbidly obese woman with a sedentary lifestyle presented to the emergency department with acute, colicky right lower abdominal and flank pain, radiating to the groin. She denied associated fever, nausea, vomiting, or urinary symptoms. Her past medical history was significant for nephrolithiasis (diagnosed in September 2024), obstructive sleep apnea (OSA), and anemia. She had no history of diabetes mellitus, hypertension, or other chronic systemic illnesses.

On examination, she appeared hemodynamically stable with a blood pressure of 126/62 mmHg and a body weight of 136 kg. Her height measured 5 feet 3 inches, yielding a BMI of 53.3, consistent with class III obesity. Physical examination revealed right lower abdominal tenderness with voluntary guarding. Notably, there was also mild right costovertebral angle tenderness on percussion. No signs of rebound tenderness or rigidity were noted. Initial laboratory investigations were performed to assess systemic involvement and renal function. These findings are summarized in Table 1. Samples of blood, urine and sputum were collected for triple culture. The non-contrast CT scan of the abdomen and pelvis revealed a 7mm right mid-ureteric calculus with mild right-sided hydronephrosis and a 4 mm stone in the ureterovesical junction. The left kidney appeared normal.

She was initiated on intravenous ceftriaxone 2g once daily, with supportive management including ondansetron, morphine 4mg as needed, and tamsulosin 0.4 mg orally. A repeat CT scan performed on the second day of admission demonstrated an inferior migration of the 7mm ureteric stone towards the ureterovesical junction, associated with persistent mild to moderate hydronephrosis. The 4mm bladder calculus, previously seen on imaging, was no longer evident, suggesting spontaneous passage of the stone. Additionally, three nonobstructive renal calculi, measuring up to 7mm were identified in the lower pole of the right kidney as shown in (Figures 1 & 2).

Table 1: Baseline laboratory findings on admission, including hematologic and renal parameters.

Parameter	Patient Value	Reference Range
Hemoglobin	10.1 g/dL	12.0-15.5g/dL
White Blood Cell Count	6.04 x 10 ⁹ /L	4.0-10.0 x 10 ⁹ /L
Neutrophils	75.4%	40-70%
Lymphocytes	11.6%	20-40%
Monocytes	10.6%	2-8%
Serum Creatinine	1.0 mg/dL	0.6-1.3 mg/dL
Glomerular Filtration Rate	70 mL/min/1.73 m ²	>90 mL/min/1.73 m ²

Sputum and urine cultures obtained after 72 hours revealed the presence of mixed flora (less than 10³ CFU). Stone composition analysis later confirmed uric acid. Blood cultures remarkably tested positive for *L. gasseri*. The patient denied any recent consumption of probiotic products, yogurt, the use of vaginal suppositories or other topical intravaginal agents. Given the rarity of this blood culture finding, the infectious disease team was consulted. To identify the potential source of bacteremia, a transthoracic echocardiogram was performed which revealed an ejection fraction of 55-60% without evidence of valvular vegetations. A CT scan of the chest was performed which displayed the absence of pulmonary nodules, hilar adenopathy, or other signs of a thoracic source. Following review of the case, the antimicrobial therapy was modified, which included the discontinuation of vancomycin and initiation of intravenous ampicillin-sulbactam 3g every eight hours and a daily 100mg dose of gentamicin. Acetaminophen was continued for analgesia, while tamsulosin and furosemide was maintained. The urology team recommended operative intervention to remove the ureteric stone. They emphasized that the presence of persistent urinary tract obstruction in the setting of *L. gasseri* bacteremia, albeit rare, presented a potential nidus for ongoing or recurrent infection. While the risks of postponing intervention, including bacteremia, sepsis and potential renal injury, were carefully discussed and explained, the patient expressed apprehension and declined surgical intervention. The patient showed clinical improvement over the subsequent days, with no fever or signs of sepsis. After five days on the adjusted antibiotic regimen, a repeat blood culture was performed. Microbiology confirmed a negative result after 72 hours of incubation. The patient was discharged in stable condition on the same antibiotic regimen, with clear instructions to ensure follow-up appointments with both the infectious disease and urology teams. Additionally, plans were made to reassess the need for surgical management once the bacteremia had fully resolved.

Discussion:

L. gasseri bacteremia is an exceptionally rare clinical entity, particularly in immunocompetent individuals without recent probiotic use, surgical instrumentation, or systemic comorbidities. Although *Lactobacillus* species are typically regarded as benign commensals of the gastrointestinal and genitourinary tracts, emerging evidence suggests that under certain conditions, they can act as opportunistic pathogens. Ramos Coria et al. reported a case of *L. gasseri* bacteremia associated with pyogenic liver abscesses in a diabetic patient, highlighting its invasive potential in compromised hosts. Similarly, Rossi et al. reviewed 48 *Lactobacillus* infections over three years and found only one case involving *L. gasseri*, underscoring its rarity and the need for clinical vigilance.

In our patient, the absence of fever, leukocytosis, or overt signs of sepsis posed a diagnostic challenge. Her morbid obesity (BMI 53.3) and sedentary lifestyle may have contributed to altered gut microbiota and mucosal permeability, potentially facilitating bacterial translocation. However, the most plausible source of bacteremia appears to be the urinary tract, given the presence of obstructive nephrolithiasis and mild hydronephrosis. This hypothesis is supported by a case reported by



Figure 1: Non-contrast CT scan showing right-sided nephrolithiasis with mild hydronephrosis (sagittal view).

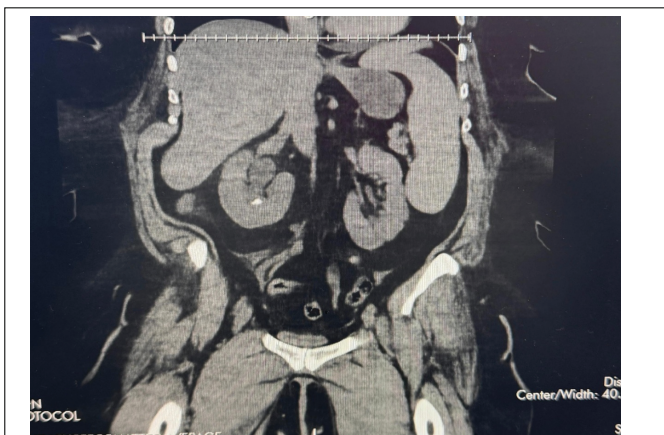


Figure 2: Non-contrast CT scan showing right-sided nephrolithiasis with mild hydronephrosis (coronal view).

Rasul et al., where a patient with nephrolithiasis and recent ureteral-stent placement developed pyelonephritis and bacteremia due to *Lactobacillus acidophilus*. Rasul et al. (2012) and Cannon et al. (2005) emphasized that *Lactobacillus* should be considered a pathogen when isolated from blood cultures in the appropriate clinical context, particularly in the presence of urinary tract abnormalities.

Further evidence of *Lactobacillus* pathogenicity in hepatobiliary infections comes from Omara et al. (2019), who reported a case of liver abscess and bacteremia due to *Lactobacillus* in a patient with uncontrolled diabetes. Their literature review highlighted the increasing recognition of *Lactobacillus* as a potential pathogen, especially in patients with metabolic or structural vulnerabilities. While our patient lacked traditional risk factors such as diabetes or immunosuppression, the presence of persistent urinary tract obstruction may have created a localized environment conducive to bacterial proliferation and hematogenous spread.

The decision to revise antimicrobial therapy from vancomycin to ampicillin-sulbactam and gentamicin was guided by susceptibility profiles and literature suggesting that *Lactobacillus* species are generally susceptible to beta-lactams but resistant to vancomycin. Rossi et al. (2022) reviewed 48 cases of *Lactobacillus* infections over three years and found that *L. gasseri* was isolated in only one case, reinforcing its rarity and the importance of individualized treatment strategies. This is further supported by Cannon et al. (2005), who emphasized the unusual antimicrobial susceptibility patterns of *Lactobacillus* species and the need for tailored therapy based on clinical context.

Although endocarditis is a known complication of *Lactobacillus* bacteremia, our patient's echocardiogram ruled out valvular vegetations. Salvana and Frank (2006), reported *Lactobacillus* endocarditis in an immunocompetent host, reinforcing that structural vulnerabilities rather than immune status alone, can permit invasive disease. Radcliffe et al. (2025) analyzed 100 cases of endovascular infections caused by *Lactobacillus*, confirming its potential for systemic involvement.

Recommendations made by the urology team for surgical intervention were based on the concern that persistent obstruction could serve as a nidus for recurrent bacteremia or renal injury. Although the patient declined operative management, her clinical improvement and clearance of bacteremia on repeat cultures supports the efficacy of conservative therapy in select cases. Regardless, the risk of recurrence remains, and close follow-up is essential. Despite the favorable clinical outcome, this case has limitations. First, the absence of advanced microbiological techniques such as whole genome sequencing (WGS) limits our ability to characterize the virulent traits of the isolated *L. gasseri* strain. Rossi et al. (2022) and Kullar et al. (2023) raised concerns about the safety of probiotics and the need for molecular identification to distinguish probiotic strains from pathogenic isolates. Salminen et al. (2004) and Lee and O'Sullivan (2010) further highlighted the clinical significance and genomic adaptability of *Lactobacillus* species. Second, anaerobic cultures were not performed, which may have underestimated the presence of co-pathogens or polymicrobial synergy. Third, the patient declined surgical intervention, precluding histopathological confirmation of a urinary source and limiting definitive causality. Lastly, as with all single-patient case reports, generalizability remains constrained, and further studies are needed to clarify the clinical significance of *Lactobacillus* bacteremia in immunocompetent hosts.

Nonetheless, this case remains crucial because it challenges the prevailing assumption that *Lactobacillus* species are always non-pathogenic. It demonstrates that even in the absence of immunosuppression, structural genitourinary abnormalities can serve as a nidus for bacteremia. The absence of classic infectious symptoms further complicates diagnosis, emphasizing the need for clinicians to interpret blood culture results in the context of anatomical and microbiological findings. By documenting a rare presentation with successful conservative management, this report contributes to a nuanced understanding of *Lactobacillus* pathogenicity and supports a more individualized approach to care.

Conclusions

This case highlights a rare but clinically significant instance of *L. gasseri*

bacteremia in an immunocompetent patient with obstructive nephrolithiasis and the absence of conventional risk factors. The presence of positive blood culture prior to initiating antibiotics, paired with radiological evidence of urinary tract obstruction and a favorable response to targeted antimicrobial therapy, supports the pathogenic potential of this otherwise commensal organism.

Given its rarity, *L. gasseri* bacteremia may be underrecognized or misclassified as contamination. However, as this case illustrates, anatomical abnormalities such as ureteric calculi can serve as a plausible nidus for microbial translocation and systemic infection. Early culture acquisition, multidisciplinary evaluation, and tailored therapy remain cornerstones of effective management. This case adds to the growing body of literature challenging traditional assumptions about *Lactobacillus* species and highlights the importance of clinical context in interpreting unexpected microbiological findings. Continued reporting of such cases is essential to enhance awareness, guide evidence-based decision-making and inform future diagnostic and therapeutic strategies.

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Ethical Consideration: Not Required.

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