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CASE REPORT

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Urinary Infection by *Weissella Confusus*: A Rare Case Report Study

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ABSTRACT

Introduction: *Weissella confusus* is a rare, opportunistic Lactic Acid Bacterium (LAB) increasingly reported as a cause of invasive and non-invasive infections, particularly in immunocompromised hosts. Its intrinsic resistance to vancomycin and frequent misidentification poses significant diagnostic and therapeutic challenges.

Aim of the Study: To present a rare case of *Weissella confusus* urinary tract infection in an immunocompromised patient and to review the existing literature on its epidemiology, pathogenic potential, and antimicrobial susceptibility, with particular emphasis on a possible association with prior occupational exposure.

Materials and Methods: We report a case of a 67-year-old male with a recent history of sigmoid colon cancer surgery and chemotherapy, presenting with urinary tract symptoms. Laboratory evaluation included complete blood count, serum biochemical analysis, urinalysis, and urine culture, microbial identification, and antimicrobial susceptibility testing.

Results: Urinalysis revealed pyuria, hematuria, and bacteriuria. Urine culture yielded a monoculture of W. confusus at 10^5 CFU/mL. The isolate demonstrated intrinsic resistance to vancomycin and susceptibility to several β-lactams, carbapenems, macrolides, tetracyclines, and linezolid. The patient exhibited laboratory markers of systemic inflammation and hematological abnormalities, prompting referral for inpatient management.

Conclusions: This case highlights W. confusus as a clinically relevant opportunistic pathogen capable of causing urinary tract infection in immunocompromised patients. Accurate identification and awareness of its antimicrobial resistance profile are essential for appropriate management.

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Introduction

Lactic acid bacteria (LAB) constitute a diverse group of Gram-positive microorganisms widely distributed in fermented foods and the human microbiota [1,2]. The genus *Weissella*, first described in the early 1990s, has attracted increasing interest due to its taxonomic complexity, ecological diversity, and biotechnological potential [3]. *Weissella confusus* is a catalase-negative, heterofermentative, Gram-positive *coccobacillus* that may exhibit pleomorphism and is often misidentified as *Lactobacillus* or *Leuconostoc* using conventional phenotypic methods [4]. Regarding identification, molecular DNA sequencing, particularly 16S rRNA gene sequence analysis, is considered the most accurate method and remains the gold standard for species-level identification of *Weissella* [4,5]. Conventional biochemical and automated identification systems frequently fail to correctly identify *W. confusus*, which may lead to inappropriate antimicrobial therapy [4,6].

W. confusus has been isolated from a wide range of ecological niches, including fermented cereals, sourdoughs, dairy products, vegetables, and meat products [7-9]. In humans, it has been detected in feces, urine, saliva, breast milk, and the vaginal microbiota, suggesting its role as a commensal organism with opportunistic pathogenic potential [3,7].

Although several *Weissella* strains have been studied for their probiotic properties and production of bioactive metabolites and exopolysaccharides, increasing evidence indicates that *W. confusus* can act as an opportunistic pathogen, particularly in immunocompromised hosts [3,6,10-12].

Reported infections caused by *W. confusus* mainly occur in patients with underlying conditions such as malignancy, diabetes

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mellitus, chronic renal insufficiency, solid organ or hematopoietic stem cell transplantation, prolonged corticosteroid use, or recent chemotherapy [5,6,13].

The clinical spectrum of *W. confusus* infections includes bacteremia, infective endocarditis, prosthetic joint infections, post-operative osteomyelitis, and, more rarely, urinary tract infections [6,13-16].

A key clinical concern is the intrinsic resistance of *W. confusus* to vancomycin, which may result in treatment failure if the organism is misidentified as another Gram-positive cocci [4-6].

Aim of the Study

The aim of this study is to present a case of urinary tract infection caused by *Weissella confusus* in an immunocompromised patient with prior occupational exposure in a vegetable canning factory, and to contextualize the findings within the existing literature on its epidemiology, transmission, pathogenicity, and antimicrobial susceptibility.

Materials and Methods

Diagnostic work-up included a complete blood count performed on the NIHON KOHDEN CelltacG (MEK-9100) hematology analyzer, serum biochemical analyses using the KONELAB 60 biochemistry analyzer, urinalysis using Multistix 10 SG reagent strips (Siemens Healthineers), and urine culture. Urine specimens were incubated at 37 °C with 7% CO_2 for 24 hours on Columbia blood agar, MacConkey agar, and Sabouraud dextrose agar for fungal isolation. The urine culture yielded a monomicrobial growth of *Weissella confusus* at >10^5 CFU/mL. The organism was identified using the RapID™ REMEL STR identification system (Thermo Fisher Scientific). Antimicrobial susceptibility testing was performed using the Kirby-Bauer disk diffusion method, in accordance with the EUCAST 2025 criteria.

Case Presentation

A 67-year-old man was admitted to the outpatient clinic of the Public Health Care Centre of Nikaia for routine laboratory evaluation, including hematological and biochemical tests, urinalysis, and urine culture. Seven months prior to the present admission, the patient had undergone surgery for sigmoid colon cancer, followed by chemotherapy, which was completed one month earlier. He reported that both the postoperative recovery period and the course of chemotherapy had been particularly challenging.

During the preceding six months, the patient had experienced recurrent urinary symptoms and had undergone four urine cultures due to urinary discomfort. He received empirical treatment with cephalosporins on multiple occasions; however, detailed information regarding previous antimicrobial regimens was unavailable. Additionally, no data were accessible concerning the microbiological findings of urine cultures performed during prior hospitalizations.

The patient's medical history was notable for type 2 diabetes mellitus, hypercholesterolemia, hyperuricemia, hypertriglyceridemia, and heavy tobacco use. He was a former employee at a vegetable canning factory and had ceased working following his cancer diagnosis. His family history included a father who died at the age of 45 from gastric cancer and a mother with ulcerative colitis.

Three days prior to presentation, the patient developed symptoms consistent with urinary tract involvement, including mild dysuria, urinary urgency, and low-grade fever. He self-administered paracetamol and antispasmodics, which provided transient symptom relief; however, symptoms subsequently recurred. He then consulted his family physician and was referred to the Biopathological Laboratory for further evaluation. On presentation, vital signs were stable, with a blood pressure of 120/70 mmHg, pulse rate of 87 beats per minute, respiratory rate of 17 breaths per minute, and a body temperature of 37.2 °C.

Given his significant medical history and immunocompromised status, the patient was referred for admission and management at a tertiary care hospital.

Occupational History

The patient reported long-term employment in a vegetable canning factory, processing products such as pickles, cabbage, carrots, cauliflower and tomatoes. He described frequent minor injuries to his hands during work, which in combination with suboptimal hand hygiene practices, particularly during toilet use, may have contributed to bacterial exposure and subsequent urinary tract infection.

Results

Laboratory findings revealed leukocytosis with neutrophilia, severe anemia, thrombocytopenia, elevated erythrocyte sedimentation rate, and increased inflammatory markers, Table 1. Urinalysis showed pyuria, hematuria, bacteriuria, and nitrite positivity. Urine culture yielded a monoculture of *Weissella confusus* at a concentration of 10^5 CFU/mL, Figure 1.

remel ERIC™ Electronic RapID Compendium

Laboratory: My Laboratory
User: admin

Ref No: 25.0000250
Report Date: 25/11/2025

RapID STR — Identification Report

Microcode: 30000

+ ARG	- SBL	- GAL	- PO4	- LYS
+ ESC	- RAF	- GLU	- TYR	- PYR
- MNL	- INU	- NAG	- HPR	- HEM

IDENTIFICATION = W. confusus

Choice(s)	Probability	Bioscore	Contraindicated Tests
W. confusus	98,96%	1/1	None
Ped. acidilactici	01,00%	1/7	LYS [80]

Probability Level: Implicit — BioFrequency: Typical

Confirmation by testing for vancomycin resistance recommended

Vancomycin resistant. Recently transfered to the genus Weissella as W. confusus. Associated with dairy products. Rare isolate from blood and other clinical specimens. Pathogenic potential is uncertain.

Table 1: Laboratory Test Results

Peripheral Blood Results		Reference Range
WBC	17.40 × 10^3/μL	4,0~9.0×10^3/μL
neutrophil ratio	72.30%	42~85%
Hb	7,8 g/dL	13,0~18,0 g/L
Hct	22.5%	36,0~56,0%
RBC	2.82×10^6/μL	3,76~5,70×10^6/μL
PLT	78×10^3/μL	150-400,0×10^3/μL
ESR	58 mm/h	0-10 mm/h
Biochemical Results		**Reference Range**
CRP	22.37 mg/L	0~10 mg/L
Ferritin	342 ng/ml	20,0-250,0 ng/ml
Glucose	147 mg/dl	74-115 mg/dl
urea	68,7 mg/dl	13,0-50,0 mg/dl
creatinine	1,87 mg/dl	0,60-1,30 mg/dl
Potassium	5,5 mmol/l	3,5-5,1 mmol/l
Sodium	131 mmol/l	136-145 mmol/l
AST/GOT	94 U/L	5-40 U/L
ALT/GPT	112 U/L	5-45 U/L
CK	249 U/L	24-190 U/L
ALP	139 U/L	53-128 U/L
GGT	79 U/L	10-55 U/L
HbA1c	7,86%	0,0-6,0 %

Antimicrobial susceptibility testing demonstrated susceptibility to penicillin G, amoxicillin, ampicillin/sulbactam, carbapenems, macrolides, tetracyclines, clindamycin, linezolid, daptomycin, and tigecycline, while intrinsic resistance to vancomycin was observed, Table 2. Resistance to several aminoglycosides, cephalosporins, trimethoprim-sulfamethoxazole, and metronidazole was noted, Table 2.

Table 2: Antimicrobial Sensitivity

Antibiotics	Sensitive	Resistant
Penicillin G	+	
Ampicillin/sulbactam	+	
Erythromycin	+	
Chloramphenicol	+	
Clindamycin	+	
Doripenem	+	
Imipenem/Meropenem	+	
Daptomycin	+	
Ciprofloxacin,Norfloxacin Levofloxacin/Moxifloxacin	+	
Piperacillin-Tazobactam	+	
Tigecycline	+	
Amoxicillin	+	
Doxycycline	+	
Tetracycline	+	
Quinqupristin/Dalfopristin	+	
Linezolid	+	
Vancomycin (intrinsic resistance)		+
Metronidazole		+
Rifampin		+
Teicoplanin		+
Ceftazidime		+
Trimethoprim-Sulfamethoxazole		+
Gentamicin		+
Streptomycin		+
Cefotaxime		+
Amikacin		+
Nalidixic acid		+
Kanamycin		+

Given the patient's immunocompromised status and laboratory abnormalities, he was referred for hospitalization and further management.

Discussion

This case adds to the growing body of evidence supporting the clinical relevance of *W. confusus* as an opportunistic pathogen. While most reported infections involve bacteremia, endocarditis, and osteoarticular infections, urinary tract infection remains exceedingly rare [4,10-14].

The patient's immunocompromised status, prior occupational exposure, and repeated ineffective empirical antimicrobial therapy may have contributed to the development of the infection.

Disruption of mucosal barriers, altered microbiota, and impaired immune responses may facilitate translocation and colonization by opportunistic LAB [9,15].

Accurate identification of *W. confusus* is critical, as misidentification may lead to inappropriate empirical therapy, particularly with vancomycin, to which the organism is intrinsically resistant [8]. Awareness among clinicians and microbiologists is therefore essential.

Conclusions

Weissella confusus should be considered a potential uropathogen in immunocompromised patients presenting with urinary tract infection. Improved recognition, accurate identification methods, and knowledge of its antimicrobial resistance profile are crucial for timely and effective treatment.

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