

Brevibacterium Bacteremia in the Setting of Pyogenic Liver Abscess: A Case Report with Accompanying Literature Review

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Background: Brevibacterium are short coryneforms species found in dairy products and known colonizers of human skin. Most commonly, bacteremia is associated with indwelling intravascular catheters in the immunocompromised. To date, there are only 16 published case reports of brevibacterium bacteremia.

Case Presentation:

A 71-year-old Pakistani man with history of triple vessel coronary artery disease status post percutaneous coronary intervention and stenting, poorly controlled type 2 diabetes mellitus secondary to medication non-adherence, hypertension, and hyperlipidemia presented for worsening mental status and abdominal pain for seven days. On admission, he was febrile, hemodynamically unstable, and altered with leukocytosis, lactic acidosis, and elevated inflammatory markers. Computed tomography with intravenous contrast showed a 6 centimeter by 4.6 centimeter rim-enhancing lesion. Abscess drainage by Interventional Radiology could not be speciated but blood cultures eventually grew Brevibacterium species. Patient was started on Unasyn for a three-week course and had improvement in his condition.

Methods: All patient information was de-identified and patient consent was obtained. Literature review for Brevibacterium bacteremia was conducted and all citations are available for review.

Discussion:

To date, there are only 18 publications mentioning Brevibacterium bacteremia, with 16 of those cases published as case reports. Of those cases, 7 patients had underlying malignancy, 2 had AIDS, 5 had chronic medical co-morbidities, 1 had a congenital abnormality of metabolism, and 1 was not mentioned. In this case report, a patient with pyogenic liver abscess was found to have concomitant Brevibacterium bacteremia. To our knowledge, this is the first instance of such a phenomenon and one of the only cases without central-line associated infection.

Conclusion: Brevibacterium infection is an uncommon but potentially fatal cause of bacteremia in the immunocompromised. This risk is increased with prolonged use of indwelling catheters and implanted devices. Infections are often indolent initially but can rapidly escalate if left untreated.

Table 1: Clinical Summaries of Brevibacterium Bacteremia Case Reports

Author (year)	Sex	Age	Brevibacterium Species	Underlying Condition	Clinical Course	Treatment Regimen (Duration)	Indwelling Catheter Present?	Outcome
McCaughey et al (1991) ⁸	M	40	<i>Epidermii</i> s	Zollinger-Ellison Syndrome	Vomiting, weight loss, recurrent duodenal	Erythromycin, TLC ^a removal	Yes-indwelling subclavian	Survived

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					ulceration, pyloric outflow obstruction		TLC ^a for TPN ^b	
Lina et al (1994) ⁹	M	19	Not specified	Lymphoblastic Lymphoma	Fever, retroocular pain; recurrence after 1 month	IV Teicoplanin, Amikacin for 20 days; Teicoplanin x21 days, TLC ^a removal	Yes- for chemotherapy; type not specified	Recurrence ; survived
Reinert et al (1995) ¹⁰	M	25	<i>Casei</i>	Testicular Choriocarcinoma	Fever, pancytopenia	IV Piperacillin, Teicoplanin for 10 days; piperacillin, tobramycin for 10 days	Yes- TLC ^a for chemotherapy	Recurrence ; survived
Kaukoranta-Tolvanen et al (1995) ¹¹	F	56	<i>Casei</i>	Non-Hodgkin Lymphoma	Fever, pancytopenia, CRP ^c 42mg/dL	Not specified	Yes- TLC ^a for chemotherapy	Recurrence ; survived
Castagnola et al (1997) ¹²	---	---	<i>Casei</i>	Neuroblastoma	Fever, ANC ^d >1000cm ³	Not specified; TLC ^a removed	Yes- Broviac® for chemotherapy	Survived
Brazzola et al (2000) ¹³	F	18	<i>Casei</i>	Acquired Immunodeficiency Syndrome (AIDS)	Fever, dehydration	IV Unasyn, switched to ciprofloxacin for 14 days; TLC ^a removed	Yes- Port-A Cath® for PPN ^e	Survived
Ogunc et al (2002) ¹⁴	---	60	Not specified	Chronic Lymphocytic Leukemia (CLL)	Fever following fludarabine chemotherapy, anemia	IV ceftazidime, amikacin; switched to vancomycin	Not specified	Survived
Janda et al (2003) ⁷	M	34	<i>Casei</i>	Acquired Immunodeficiency Syndrome (AIDS)	CD4<50, known CMV retinitis, oropharyngeal candidiasis, neutropenic fever, malaise	IV vancomycin for 8 days, ceftazidime (stopped); TLC ^a removed	Yes- Hickman® catheter for long-term gancyclovir infusion	Survived
Beuinga et al (2004) ¹⁵	F	43	<i>Casei</i>	Crohn's Disease	Chronic fistulae, total colectomy, fever, WBC ^f 3300, CRP ^c 5.8 mg/dL	IV vancomycin for 15 days, TLC ^a remained; IV Unasyn, Merem, amikacin, TLC ^a removed	Yes- Port-A-Cath® for PPN ^e	Recurrence (at 5 months); died
Beuinga et al (2004) ¹⁵	M	31	<i>Casei</i>	Not specified	Fever, WBC ^f 4700, CRP ^c (-)	IV vancomycin for 15 days, TLC ^a remained; same treatment	Yes- Hickman® catheter for hemodialysis	Recurrence (at 5 months); survived
Ulrich et al (2006) ³	F	62	<i>Casei</i>	Severe pulmonary hypertension	Flu-like symptoms, productive cough, chills, fever, hypoxemia, CRP ^c 38 mg/dL	IV vancomycin for 10 days, then moxifloxacin for 20 days, TLC ^a removed	Yes- TLC ^a for iloprost infusion	Survived
Bal et al (2015) ¹⁹	M	6	<i>Casei</i>	Acute Lymphoblastic	Herpes zoster infection,	IV Zosyn, vancomycin	Yes- Hickman®	Survived

				Leukemia (ALL), B cell type	pancytopenia, neutropenic fever, ANC ^d 387 mm ³ /uL, CRP ^e 6.1 mg/dL	for 10 days, TLC ^a remained	catheter for chemotherapy	
Bonavila et al (2017) ¹⁶	M	60	<i>Casei</i>	Child-Pugh C alcoholic cirrhosis, aortic stenosis; development of aortic valve endocarditis and insufficiency with recurrence	Tremor, altered mental status, fever, pustular rash; decompensated cirrhosis, coagulopathy, thrombocytopenia, 1.5cm aortic valve vegetation seen on TEE ^g ; right arm weakness, septic emboli	Oral Levaquin for 10 days, then norfloxacin; IV vancomycin for 4 weeks; IV vancomycin for 10 days, daptomycin for 6 days	Not specified	Recurrence (30 days, 90 days); died
Vecten et al (2017) ¹⁷	M	4	<i>Massiliense</i>	Congenital methylmalonic acidemia	Fever, cough, emesis, left ear discharge, WBC ^f 9400/uL, CRP ^e (-), oxalic acid 0.020 mmol/L	Intra-auricular ofloxacin for 8 days	Yes-gastrostomy tube present	Survived
Magi et al (2018) ¹⁸	F	48	<i>Casei</i>	Bilateral breast cancer requiring mastectomy, chemotherapy, radiation, and salpingoophorectomy	Fever, myalgia, CRP ^e 5.97 mg/dL	IV teicoplanin for 7 days, linezolid for 7 days, TLC ^a removed	Yes-transjugular Port-A-Cath [®] from prior chemotherapy treatment	Survived
Asai et al (2019) ⁵	F	94	<i>Paucivora</i>	Type 2 diabetes mellitus, congestive heart failure	Fever, decreased oral intake, appetite loss, thrombocytopenia, CRP ^e (-)	IV Merem, teicoplanin for 14 days	Not present	Survived
Our Case	M	71	Unable to speculate	Poorly controlled type 2 diabetes mellitus, pyogenic liver abscess	Altered mental status, abdominal pain, decreased oral intake, WBC ^f 12,000, anemia, hyponatremia, hyperglycemia, HbA1c 12.2, acetone (-), CRP ^e 50 mg/dL, procalcitonin 8.16	IV Unasyn for 3 weeks, abscess drainage	Not present	Survived

Legend: M=male, F=female; ^aTLC=triple lumen catheter; ^bTPN=total parenteral nutrition, ^cCRP=c-reactive protein, ^dANC=absolute neutrophil count, ^ePPN=partial parenteral nutrition, ^fWBC=white blood cell, ^gTEE=transesophageal echocardiogram