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## Case Report

# A case of enterococcus hirae bacteremia with urinary tract infection in a immunocompromised patient

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### ABSTRACT

Enterococcus infections are common, but infections caused by *Enterococcus hirae* is rare as it is commonly found in mammals and birds. We describe a case of *Enterococcus* bacteremia occurring with urinary tract infection associated with chronic liver disease, cholelithiasis and acute kidney injury which was treated with antibiotic therapy and other supportive management. This rare zoonotic disease is emerging to be life-threatening in especially immunocompromised individuals. Thus clinicians should be informed of this little recognized pathogen and help in reducing mortality especially in immunocompromised individuals.

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## 1. Introduction

Infections caused by *Enterococcus* spp like *Enterococcus faecium* and *Enterococcus faecalis* are common. Vancomycin Resistant *Enterococcus* has gained immense clinical importance in the area of hospital acquired infections. It is normally present in the intestine of humans. *Enterococcus hirae* is relatively rare infection reported in humans which is common in mammals and birds. We describe a case of *E. hirae* bacteremia with urinary tract infection and review medical literature on human infection with *E. hirae*.

## 2. Case Report

A 62yrs female patient came to Emergency department with complaints of yellowish discoloration of skin and sclera for two days; fever, loss of appetite since two days. The patient also had loss of weight and abdominal distension.

Past medical history was significant for Chronic Liver Disease (NASH related), diabetes mellitus and had hepatic

Encephalopathy Grade I. Variceal banding was done two years ago.

On examination patient was icteric with soft and distended abdomen. Initial blood pressure was 160/70 with a heart rate of 68 beats/min and a Respiratory rate of 21 breaths/min.

Initial lab investigations showed total WBC count-13,100/microliter; Complete urine examination showed plenty of Pus Cells; Urea – 63mg/dl; Serum Creatinine – 1.52mg/dl; Serum levels of sodium – 123mEq/lit, Potassium – 45mEq/lit, Chloride – 92 mEq/lit; total bilirubin-6.6mg/dl; direct bilirubin-3.7mg/dl, SGPT-28U/l; SGOT- 42U/l; ALP-88U/l; total Protein – 5.7gm/dl; albumin-2.9mg/dl; globulin-2.8gm/dl; Procalcitonin- 0.27ng/ml.

USG Abdomen showed Chronic Liver Disease with dilated portal vein, minimal interbowel fluid, and splenomegaly with dilated splenic veins.

Empiric antibiotic therapy was started with Piperacillin-Tazobactam 4.5gm every 8hrly. Blood and Urine were sent for culture and sensitivity at the time of admission. One set of blood culture drawn from the peripheral line at the time of admission (each set consists of a BACT/ALERT FA Plus Aerobic blood culture vial and a

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BACT/ALERT FN Plus Anaerobic blood culture vial) grew *Enterococcus hirae*. Subsequently, urine culture also grew  $10^5$ cfu/ml *Enterococcus hirae*. (The isolate was identified and AST done by Vitek-2 Compact System which is an automated system based on broth microdilution using reagent card. The system allows kinetic analysis by reading each biochemical test every 15 minutes. The optical system has the multichannel fluorimeter and photometer readings to record the fluorescence, turbidity, and colorimetric signals.) The isolates from Blood Culture and Urine Culture were bearing same bionumbers.

Diagnosis of Sepsis with Urinary Tract Infection and Acute Kidney Injury was established. *Enterococcus hirae* was sensitive to Penicillin, Ampicillin, High Level Gentamicin, Ciprofloxacin, Erythromycin and Linezolid. Since *Enterococcus* spp. sensitive to Penicillin are also sensitive to Ampicillin, Amoxicillin, Amoxicillin-Clavulanate and Piperacillin – Tazobactam, Piperacillin-Tazobactam 4.5gm was continued.

**Table 1:** Sensitivity Pattern of *Enterococcus hirae* in blood.

Antibiotics	Interpretation	MIC (mu/ml)
Benzyl penicillin	Sensitive	1
Ampicillin	Sensitive	2
High Level Gentamicin	Sensitive	
Ciprofloxacin	Sensitive	$\leq 0.5$
Erythromycin	Sensitive	$\leq 0.25$
Linezolid	Sensitive	2

The Complete Blood Picture showed decrease in total WBC count from 13,100/microlitre to 6,200/microliter on day 4.

Repeat blood cultures drawn on day 12 remained sterile. Repeat Urine culture also showed no growth.

The complaints of fever got resolved and the clinical condition of the patient improved. Treatment was continued and patient was discharged after 2 weeks of Intravenous antibiotic therapy.

### 3. Discussion

*Enterococcus hirae* is a Gram Positive Coccus arranged in pairs and short chains, reported rarely in humans. It is common though in mammals and birds.

In Indian context, our case is unique where *Enterococcus hirae* bacteremia and urinary tract infection has been associated with an immunocompromised condition i.e. Chronic Liver Disease. In a similar study reported from India, *Enterococcus hirae* has been reported in the form of prevalence study from various clinical isolates.<sup>1</sup>

The case presented here has *Enterococcus hirae* bacteremia occurring along with Urinary Tract Infection. Similar case was reported of *Enterococcus* bacteremia with UTI from Turkey.<sup>2</sup>

In our case, the patient has Liver Pathology present in the form of Chronic Liver Disease with cholelithiasis. There is a similar case reported where *Enterococcus hirae* pyelonephritis was associated with alcoholic liver cirrhosis from Japan.<sup>3</sup> A case from Korea was reported where spontaneous bacterial peritonitis and cirrhosis was associated with bacteremia.<sup>4</sup> Another case from France was reported where *Enterococcus hirae* bacteremia was associated with cirrhosis and pyonephrosis.<sup>5</sup> A similar entity of liver pathology was observed in a case of *Enterococcus hirae* occurring in Taiwan where bacteremia with cholangitis and pyelonephritis was observed.<sup>6</sup>

There was a case reported from the United States of America where Septic shock occurred in association with *E. hirae* bacteremia and acute Pancreatitis.<sup>7</sup>

There were two case reports which give an account of bacteremia in association with endocarditis where Native valve<sup>8</sup> and Prosthetic valve was involved.<sup>9</sup>

In the given case Bacteremia was also associated with Acute Kidney injury along with Urinary Tract Infection. There are other cases where bacteremia was associated with End stage renal disease and the patient was on hemodialysis.<sup>10</sup> *Enterococcus hirae* was also reported from umbilical cord blood.<sup>11</sup>

Infections with *Enterococcus hirae*, continue to emerge as a zoonotic infection and has severe clinical implications in especially immunocompromised patients. Health professionals need to be informed of this little-recognized pathogen and not consider it as an environmental contaminant, hence saving lives from life-threatening infections and reduce mortality amongst immunocompromised patients.

### 4. Conflict of Interest

The authors declare no relevant conflicts of interest.

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