

***Eggerthella lenta* Bacteremia after Endoscopic Retrograde Cholangiopancreatography in an End-Stage Renal Disease Patient**

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Eggerthella lenta is rarely isolated from blood but may occur as an opportunistic pathogen with high morbidity and mortality. We report a case of *E. lenta* bacteremia after an endoscopic retrograde cholangiopancreatography in an end-stage renal disease

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Key Words: Bacteremia, Biliary sepsis, *Eggerthella lenta*

INTRODUCTION

Many anaerobic Gram-positive bacilli including *Clostridium*, *Propionibacterium*, and *Eggerthella* are common gut commensals [1,2]. Many of these bacteria are considered as contaminants in blood culture, but some *Eggerthella* species isolated from blood culture are clinically significant [3]. In particular, *Eggerthella lenta* is rarely isolated from blood but may occur as an opportunistic pathogen with high morbidity and mortality. The first Korean case report of *E. lenta* bacteremia was presented in 2014 [4]. Herein, we report a case of *E. lenta* bacteremia after endoscopic retrograde cholangiopancreatography (ERCP) in an end-stage renal disease patient.

CASE REPORT

A 69-year-old man visited our emergency room with abdominal pain of one day. In past medical history, he had a surgery for mitral and tricuspid valve prolapse 19 years ago. He was diagnosed with liver cirrhosis and end-stage renal disease 12 years ago, and then has taken hemodialysis since then. In addition, he had a surgery for common bile duct stone with cholangitis 10 years ago. On physical examination, he had tenderness on epi-

gastrium, a blood pressure of 90/60 mmHg, heart rates of 120 beats/min, and a respiratory rate of 22 breaths/min. His initial blood cell counts were as follows: hemoglobin, 12.7 g/dL; white blood cell counts, $15.4 \times 10^9/L$; and platelets, $34 \times 10^9/L$. Coagulation studies revealed prolonged prothrombin time of 16.7 seconds (INR 1.54) and increased fibrinogen, fibrinogen degradation products, and D-dimer to 582.5 mg/dL, 14.8 $\mu g/mL$, and 4.27 mg/L, respectively. Each of blood urea nitrogen and creatinine was increased as 20 mg/dL and 6.13 mg/dL. Abdominal computed tomography with contrast showed findings of acute cholecystitis with combined mild hepatocholangitis and left intrahepatic bile duct and common bile duct dilatation with pneumobilia. So we could suspect the biliary sepsis. On hospital day 1, his temperature was increased to 37.8°C and he underwent ERCP and endoscopic nasobiliary drainage (ENBD). *Pseudomonas putida* was identified from bile juice by VITEK 2 (bioMérieux, Hazelwood, MO, USA). Two pairs of first blood culture (bioMérieux, Hazelwood, MO, USA) were done before ERCP, and *Bacteroides vulgatus* was identified by VITEK 2. In a few hours after ERCP, the patient's temperature increased up to 38.5°C, and WBC increased to $26.5 \times 10^9/L$. Two additional pairs of blood cultures were drawn due to abrupt increase of body temperature, and on hospital day 2, metronidazole was add-

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ed to flumoxef sodium empirically to cover the anaerobic bacteria infection. Both of two anaerobic culture bottles showed positive signs after 4 days of incubation. There were small, white, non-hemolytic colonies observed on blood agar plates after 24 hours in the anaerobic culture (Gaspak EZ Gas Generating Systems, Becton, Dickinson and Company, Sparks, MD, USA). These colonies were identified as *E. lenta* by VITEK 2 and also confirmed by 16S rRNA sequencing. It showed 100% identity to *E. lenta* in GenBank sequence NR074377.1 (PCR Primer 9F: GAGTTTGATCCTGGCTCAG, 1512R: ACGGCTA CCTTGTT ACGACTT). We performed antibiotic susceptibility test using Etest (bioMerieux, Marcy l'Etoile, France) on Brucella agar supplemented with 5 μ g/mL hemin, 1 μ g/mL vitamin K1, and 5% laked sheep blood. Following CLSI M11-A8 and CLSI M100-23, the results showed susceptibility to metronidazole (MIC 4 mg/L), meropenem (MIC 0.125 mg/L), and chloramphenicol (MIC 1 mg/L) as well as resistance to cefotaxime (MIC >32 mg/L) and penicillin G (MIC 2 mg/L). The patient had recovered fully after antibiotic therapy and discharged.

DISCUSSION

E. lenta, formerly *Eubacterium lentum*, is gram-positive, non-spore-forming, obligately anaerobic rod. It is a member of the family *Coriobacteriaceae*, and reclassified as a novel genus because of their distinct 16S rRNA sequence in 1999 [1,5]. *E. lenta* demonstrated a fastidious and slow-growing nature. Correct identification of *Eggerthella* at the species level was difficult with conventional phenotypic methods [6]. The pattern of acid production in peptone-yeast extract glucose broth can be used to differentiate *Eggerthella* and *Eubacterium* from other closely related genera, such as *Propionibacterium*, *Bifidobacterium*, *Lactobacillus*, and *Actinomyces* [1,7]. Although some automated identification systems such as Vitek 2, have *E. lenta* in their databases, these tests are limited. Furthermore, most databases of commercial rapid identification systems do not include new subspecies of *Eggerthella*, *Paraeggerthella*, and *Eubacterium* [7]. Because of this limitations, 16S rRNA sequencing is thought as a good choice for a diagnostic tool to confirm *E. lenta* infections [2,6,8]. And *E. lenta* bacteremia is considered to be more than identified because of its difficulties of identification [2,8]. But in the case of *E. lenta* from VITEK 2, we think that confirmation by 16S rRNA sequencing may not be needed in consideration of latest reports including our case [4,6,9].

E. lenta was isolated from feces primarily and known as gut

commensals. The various cases of *E. lenta* infections were reported associated with intrauterine devices, bacteremia associated with malignancy and female genital tract infections [10], cutaneous abscess [11] and bacteremia in Crohn's disease patient [9]. Some reports showed that *E. lenta* can lead to high morbidity and mortality including septic shock, multiple organ failure, and death [7,9], but the pathogenesis of these cases, especially bacteremia, has not been well established [2,7,9,12-14]. We hypothesize that translocation from gut to blood may be possible if there are defects in the gastrointestinal tract, because *E. lenta* is known to be a gut commensal [9]. Also a group in Hong Kong also reported that 18% of clinically significant bacteremia caused by anaerobic, gram-positive bacilli were related to *E. lenta* [2]. Furthermore, *E. lenta* bacteremia is primarily community acquired [2,3].

In our case, the patient had *E. lenta* bacteremia after ERCP. Therefore, *E. lenta* bacteremia could be secondary infection due to translocation into blood from GI tract after ERCP and ENBD. The patient had acute cholecystitis with combined mild hepatocholangitis and the known predisposing factor of end-stage renal disease treated by hemodialysis. Other known predisposing factors include malignancy, immobilization, bed sores, diabetes mellitus, and stroke [2,7].

We are not sure that the *B. vulgatus* isolated before ERCP was primary pathogen in biliary sepsis, but there are many mixed infection by anaerobic bacteria and we cannot recover *B. vulgatus* from second drawn of blood culture that *E. lenta* isolated from. So we think there are two possibilities. First, it was transient bacteremia or contaminant without clinical significance because we could not isolate it from second drawn blood culture. Second, the *B. vulgatus* bacteremia was true pathogen before ERCP and no growth in second drawn of blood cultures due to empirical injection of flumoxef sodium, but we thought it was less likely.

Bacteremia caused by anaerobic, gram-positive bacilli should be managed cautiously. Especially in patients with predisposing factors, bacteremia is associated with high mortality [3,6,7,14]. Exact identification of the infection source and causal organism should be sought, and prompt initiation of antibiotic treatment is needed. *E. lenta* and some anaerobic bacteria can be identified using commercial identification systems. As mentioned above, we think *E. lenta* identification from VITEK 2 may be reliable but more studies about the identification of anaerobes and its confirmation is needed.

A few studies reported the susceptibilities of *E. lenta* [3,6,7,

15]. In the article by Mosca et al, including 29 strains of *E. lenta* clinical isolated, all were susceptible to clindamycin, piperacillin and imipenem [15]. And Lau et al. reported all 10 *Eggerthella* and *Paraeggerthella* isolates were susceptible to penicillin and metronidazole [3]. But another study by Lee et al., they reported 8 strains of *E. lenta* clinical isolated showed high resistance rate to penicillin but all of the tested strains showed susceptible to ampicillin-sulbactam, meropenem, imipenem and metronidazole. Also they performed the susceptibility tests of the newly developed antibiotics including doripenem, tigecycline and daptomycin and they showed low MICs [7]. This result reported in 2012 was different with the report by Lau et al in 2004 about the susceptibility to penicillin. We think susceptibility to penicillin may be decreased due to antibiotics overuse. So we suggest that clinicians should avoid the use of penicillin in the case of *E. lenta* bacteremia because recent report showed high resistance to penicillin [7]. We think metronidazole may be first choice for *E. lenta* bacteremia according to previous reports and carbapenems could be used, too. We cannot find ertapenem breakpoint and did not perform the susceptibility test of ertapenem, but there is an interesting case report that showed clinical improvement using ertapenem empirically [12].

This case illustrates that *E. lenta* bacteremia can be caused by invasive procedures through the intestines in patients with predisposing risk factors. The conventional phenotype method of diagnosis for anaerobic, gram-positive bacteremia may be confirmed by 16S rRNA gene sequencing. Since *E. lenta* bacteremia shows high mortalities, clinicians should manage the bacteremia carefully.

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=국문초록=

만성신장질환 환자에서 내시경 역행 채담관 조영술 시술 후 발생한 *Eggerthella lenta* 균혈증

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*Eggerthella lenta*가 혈액에서 분리되는 경우는 많지 않으나, 높은 사망률을 보이는 기회감염균으로 보고되어 있다. 저자들은 말기신장질환 환자에서 내시경 역행 채담관 조영술 후에 *E. lenta* 균혈증을 경험하여 보고하고자 한다. [Ann Clin Microbiol 2014;17:128-131]

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