Case Report

Gemella haemolysans Bacteraemia in a Patient with Solitary Liver Abscess

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We present a case of a 42-year-old man with a solitary liver abscess and Gemella haemolysans bacteraemia. No other focus of infection was identified. The patient did not have any predisposing factors. He was treated with antibiotics for 6 weeks and the abscess was drained. He made a complete recovery.

KEYWORDS: Gemella haemolysans, liver abscess

Introduction

Solitary or multiple liver abscesses arise as a result of haematogenous spread of bacteria from a distant site, or from local spread from contiguous sites. Associated disease of the biliary tract is the most common source of infection. Pyogenic liver abscesses are often polymicrobial in origin.1 Early diagnosis followed by appropriate antibiotic therapy with or without percutaneous drainage is essential to reduce morbidity and mortality. Coliforms such as Escherichia coli and Klebsiella are the most common bacterial isolates from liver abscesses. To the best of our knowledge, we report the first case of Gemella haemolysans bacteraemia in a patient with a liver abscess.

Case Report

A 42-year-old man developed fever, night sweats, rigors and generalized muscle ache for 1 week. Ten days later he started to feel nauseated, vomited a few times and developed a dry cough. He also noticed that he was passing “dark urine”.

At presentation, he appeared very unwell, septic, pyrexial and icteric. There was evidence of right basal consolidation and moderate hepatomegaly. Investigations revealed a neutrophilic leukocytosis (total white blood cell count = 47.4 × 10⁹/L; neutrophils = 44.5 × 10⁹/L), raised C-reactive protein level (307 mg/L), abnormal liver function tests (aspartate aminotransferase = 219 U/L; alanine aminotransferase = 185 U/L; alkaline phosphatase = 277 U/L), and mild hyponatremia (129 mmol/L). Renal function and plasma glucose were normal. Markers for viral hepatitis (hepatitis B surface antigen, hepatitis A IgM, and hepatitis C antibody) and human immunodeficiency virus antibody were all negative. Blood culture taken on admission grew of G. haemolysans. Gemella was identified with the help of API 20 Strep system (Biomerieux, March l’Etoile, France). It was identified as G. haemolysins because it was 2-naphthyl phosphate positive, VP positive, and L-leucine Betanaphthylamide negative. It was susceptible to penicillin, ceftriaxone, erythromycin, tetracycline and vancomycin.
Gemella haemolysans bacteraemia in a patient with solitary liver abscess

Echocardiogram showed no evidence of infective endocarditis and colonoscopy was normal.

Ultrasound of abdomen confirmed enlargement of the liver with the presence of an echo-poor lesion with enhancing margins in the right lobe of the liver (Figure 1). Doppler flow of the lesion was negative. Diagnosis of liver abscess was confirmed by abdomen computed tomography (CT) scan. The scan showed a $12.5 \times 10.0 \times 7.5$ cm lesion in the right lobe of the liver, which had a relatively subtle largely peripheral solid component on both arterial and venous phase imaging and a large multifocal central area of fluid density suggestive of central necrosis (Figure 2). There was also evidence of bibasal collapse consolidation (more marked on right side) with a small pleural effusion on the right side. The patient was treated with intravenous ceftriaxone and initial percutaneous aspiration, but he failed to improve despite 10 days of antibiotic therapy. A decision was taken to drain the abscess again, under ultrasound guidance, using the Seldinger technique. Straw colored turbid fluid was drained from the abscess cavity using a 6.5 French locking pig-tail catheter. Gram-stain of pus revealed no organisms. Culture of the pus did not grow any bacteria, most likely due to prior antibiotics treatment. No anaerobe was grown either. The source of bacteremia was unknown.

Antibiotics were administered for 6 weeks via a peripherally inserted central catheter (PICC) line. The patient made a complete recovery. Follow-up CT scan of the liver was normal.

**Discussion**

*Gemella* species are facultative anaerobic Gram-positive cocci, which are commensal organisms of the human oral cavity, gastrointestinal tract, upper respiratory tract and genitourinary tract. The members of this genus include *G. haemolysans*, *G. morbillorum*, *G. bergeri*, *G. sanguinis*, *G. palaticanis* and *G. cuniculi*. DNA hybridization and comparative 16s rRNA gene sequencing is used to classify the different members of this genus. Infections due to *Gemella* closely resemble those caused by the Viridans streptococci.

*G. haemolysans* was first described in 1938. It is catalase and oxidase negative and ferments carbohydrates. It is easily decolorized in Gram-stain and may appear as Gram-negative. This led to misclassification of this organism in the genus *Neisseria* prior to the availability of nucleic acid hybridization techniques. Even though *G. haemolysans* is easily decolorized in Gram-stain, some cells however do not decolorize and remain Gram-positive. The microscopic film can therefore appear as Gram-variable cocci present in pairs or tetrads.

Generally human infection caused by *Gemella* species are associated with underlying conditions, including an immunocompromised state, cancer, heart disease, sinusitis...
or poor dental hygiene as well as previous invasive procedures. However, our patient did not have any of these predispositions.

_G. haemolysans_ has been reported to cause endocarditis, endophthalmitis, keratopathy, meningitis, brain abscess, pharyngeal abscess, pneumonia, empyema thoracis and vertebral osteomyelitis.²³,⁸–²⁴

Infections of the biliary tract (e.g. cholangitis, cholecystitis) are the most common identifiable source of liver abscess. Infection usually spreads to the liver from the bile duct along a penetrating vessel or from an adjacent septic focus (including pylephlebitis).²⁵ In 40% of the pyogenic duct along a penetrating vessel or from an adjacent septic abscess. Infection usually spreads to the liver from the bile cystitis) are the most common identifiable source of liver abscess. Fungal and mycobacterial liver abscesses are rare. There are rare reports of _G. morbillorum_ from liver abscesses.²⁶–²⁸ However, isolation of _G. haemolysans_ from blood has not been previously associated with liver abscess.

_Gemella_ is generally sensitive to β-lactam antibiotics.²⁹ Resistance has been reported to vancomycin, teicoplanin, erythromycin and tetracycline.²⁹–³¹ Cephalosporins are useful broad-spectrum therapeutic choices for treating pyogenic liver abscesses. In addition, metronidazole is often added to cover anaerobic organism. Antibiotic therapy should be administered intravenously for at least 2 weeks initially and then orally for up to 6 weeks.³² The mortality rate for patients with hepatic abscesses treated with antibiotics and percutaneous drainage has improved dramatically in the last few decades but still remains at about 6%.³³ Worse outcome is associated with a delay in diagnosis, resistant organisms, incorrect choice of antibiotics, multiple abscesses, multiple organisms, shock, jaundice, underlying malignancy and immunocompromised state, multi-organ dysfunction and other medical co-morbidities.⁶

_Gemella_ is a rare but important cause of pyogenic infections and if isolated from sterile sites, should never be dismissed as a contaminant. While bacteraemia due to streptococci and the related genera should always arouse the suspicion of infective endocarditis, investigations for the presence of other pyogenic foci should be carried out if no vegetations are found on cardiac ultrasound even in absence of predisposing factors. In particular, it is worth emphasizing that compared to typical Viridans _streptococci_, isolation of _Gemella_ is less often associated with infective endocarditis. In Facklam’s review, only 8/46 cases of Gemella infection could be attributed to endocarditis compared with _S. sanguis_ (106/202) or _S. mutans_ (64/152).

References


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