



Short report

Colon cancer and enterococcus bacteremia co-affection: A dangerous alliance

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ABSTRACT

Adenocarcinoma of the colorectal region is one of the leading causes of cancer-related mortality in the USA and hence an important public health concern. *Enterococci* are emerging as an important cause of infection in the elderly. While translocation of enteric bacteria into the bloodstream is a known phenomenon in patients with infectious, inflammatory or infiltrative conditions of the bowel, a causative link between *Enterococcus* bacteremia and colorectal cancer has not been established in medical literature. We report the case of a patient presenting with *E. faecalis* bacteremia who was also diagnosed with infiltrating adenocarcinoma of the rectum. We discuss a possible relationship between these two conditions.

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Introduction

There is strong support for the relationship between *Streptococcus bovis* and *Clostridium septicum* and malignancies of the gastrointestinal tract [1–4]. Current evidence-based-medicine practice recommends a colonoscopy be performed in a patient with *S. bovis* and *C. septicum* bacteremia. This case report and review will focus on the possible link between *E. faecalis* bacteremia and colon cancer. Our patient had recurrent episodes of gastrointestinal bleeding which was subsequently identified to be secondary to colorectal adenocarcinoma. He probably developed bacteremia secondary to translocation of colonic *Enterococcus*. While *Enterococci* are emerging as an increasingly important cause of infections in the elderly, malignancy has been found to be one of the most common co-morbidities. Although a direct correlation between *Enterococcus* bacteremia and colorectal cancer has not yet been well established, it will serve patients and their providers well to investigate for one when the other is discovered.

Case report

An 86-year-old Caucasian male presented with a one-day history of fever and a 6-month history of progressively worsening

cough. His past medical history was significant for coronary artery bypass grafting, mitral valve replacement secondary to severe stenosis, aortic stenosis, atrial fibrillation, cardiac pacemaker and hypertension. There was no history of dental work in the last two years, and no recent genito-urinary or gastrointestinal procedures prior to his presentation. However one month prior, he had reported to his primary care physician episodes of bleeding per rectum along with intermittent diarrhea for which he was scheduled to have an out-patient colonoscopy. Physical examination revealed a temperature of 98.6 °F (37 °C). He had a soft systolic murmur in the aortic area. Air entry was bilaterally equal, with bilateral basal rales. He had non-tender pitting edema up to his knees.

Laboratory workup revealed leucocytosis ($15.8 \times 10^9/l$) and anemia (hemoglobin 10 g/dl). Creatinine was 1.17 mg/dl. Beta natriuretic peptide (BNP) was 7701 pg/ml (normal < 450 pg/ml). Chest radiography revealed pulmonary edema with bilateral pleural effusions and pneumonia. Sputum cultures revealed respiratory flora. Two sets of blood cultures (BacT/Alert 3D, Bioré) drawn on admission were positive for gram positive cocci in clusters in all four bottles in less than 24 h. Final identification was *E. faecalis* sensitive to ampicillin and vancomycin, with synergy to gentamicin and streptomycin according to the Clinical and Laboratory Standards Institute guidelines.

On admission the patient was initiated on empiric antibiotic therapy with intravenous ceftriaxone 2 g once a day and azithromycin 500 mg by mouth once a day for suspected community acquired pneumonia. However when blood cultures revealed gram positive cocci, intravenous vancomycin (20 mg/kg once a day)

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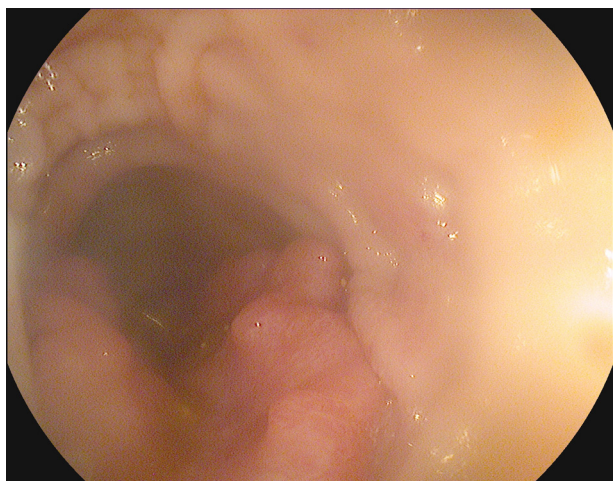


Fig. 1. Colonoscopy findings: colon polyps.

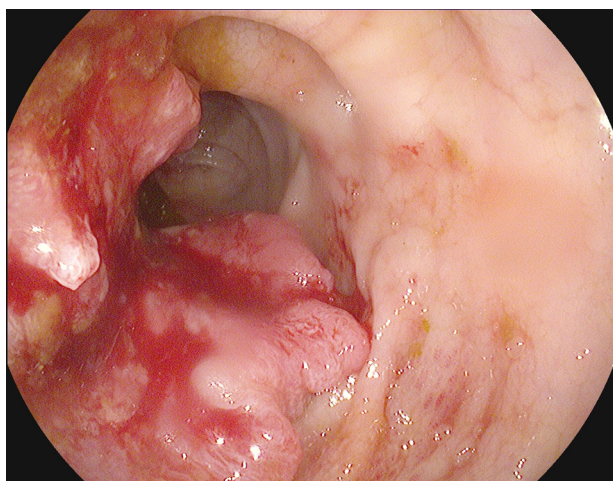


Fig. 2. Colonoscopy findings: irregular ulcerated area with bleeding.

was added pending final identification and sensitivity testing. The organism was identified and antibiotic sensitivities were available on day four after admission, therapy was changed to a combination of ampicillin (2 g every 6 h intravenous) and gentamicin (1 mg/kg every 12 h intravenous). Unfortunately he developed increasing creatinine, gentamicin had to be discontinued after 10 days and was replaced by ceftriaxone (2 g every 12 h intravenous). He continued on the combination of ampicillin and ceftriaxone to complete 6 weeks of antibiotics after first negative cultures. Transthoracic echocardiogram showed no vegetations on any of the heart valves. A transesophageal echocardiogram was unsuccessful secondary to Zenker's diverticulum in the proximal esophagus. The patient underwent a colonoscopy which revealed few benign-appearing polyps (Fig. 1) and one irregular ulcerated area with bleeding at 15 cm suspicious for carcinoma (Fig. 2). Multiple biopsies were obtained from this area. Histopathology revealed moderately differentiated infiltrating adenocarcinoma (Figs. 3 and 4). A positron emission tomography (PET) scan was performed which revealed intense localized radio-isotope uptake at the level of rectosigmoid and rectum, no evidence for metastatic disease in the abdomen or pelvis.

The blood cultures turned negative four days after initiation of antibiotics. He refused any surgery and oncology intervention. He was discharged to a rehabilitation facility on combination antibiotics delivered via a peripherally inserted central catheter (PICC).

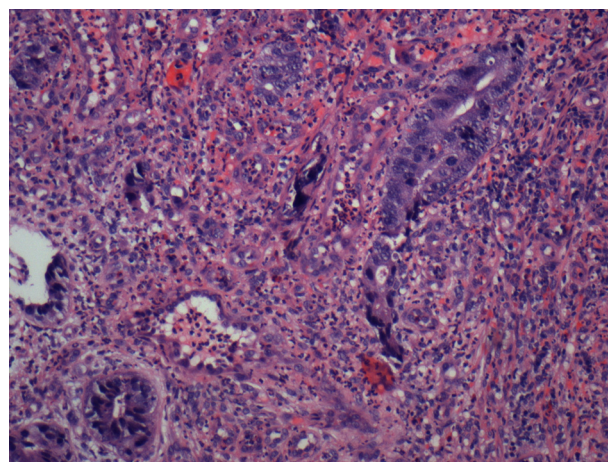


Fig. 3. Histopathology 10× revealing irregular glandular structures consistent with adenocarcinoma.

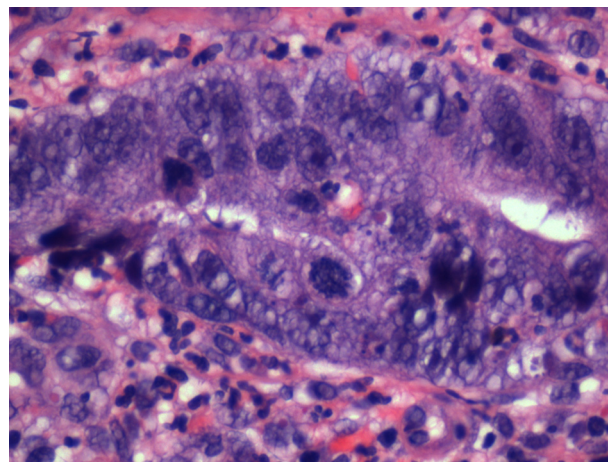


Fig. 4. Histopathology 40× of the glandular structure revealing pleomorphic cells with prominent nucleoli and mitotic figures.

Surveillance blood cultures obtained on day 14 remained negative. The patient required readmission to the hospital 8 weeks later for treatment of decompensated congestive heart failure (BNP 3743 pg/ml). Blood cultures were repeated and they were sterile. He was discharged back to rehabilitation facility after appropriate diuresis. Two weeks later he required readmission to the hospital secondary to bloody diarrhea. He consented to surgery and was taken to the operating room where he underwent a low anterior resection of the recto-sigmoid colon, with end colostomy, and creation of a Hartmann's pouch. His post-operative course was associated with multiple complications including heart failure, respiratory failure and need for prolonged ventilator support via tracheostomy, pneumonia due to *Pseudomonas aeruginosa*, and *Clostridium difficile* infection. After a prolonged hospital stay (1 month) he was discharged and underwent successful rehabilitation, removal of ventilator and tracheostomy tube and he returned home around four months after his surgery. Surveillance computed tomography scan done 6 months after excision of tumor revealed no recurrence of any mass or lymphadenopathy.

Discussion

Sepsis secondary to bacteria found in the gastro-intestinal tract is commonly caused by increased permeability of the damaged colonic mucosa [5]. Colonic mucosal damage can be caused by

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