

Helicobacter pylori bacteremia: an unusual finding

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Abstract

We report a case of *Helicobacter pylori* transient bacteremia in a woman with ulcerated antral gastric cancer. The patient was hospitalized for laparoscopy and subtotal gastrectomy. After surgery she developed fever (39°C) and was empirically treated with levofloxacin. Blood cultures, collected and sent immediately to Laboratory, were positive for a spiral Gram-negative bacterium. This isolate was identified as *H. pylori* and the specific susceptibility test was performed. One day after the fever was decreased but antibiotic treatment with levofloxacin was continued and it was maintained until discharge. In summary, *H. pylori* transient bacteremia may occur as a rare complication after stomach surgery. Further studies are necessary to elucidate the potential role of *Helicobacter pylori* presence in blood.

Introduction

Helicobacter pylori is a microaerophilic fastidious human pathogen. It plays a key role in the pathogenesis of peptic ulcer disease, and is associated with gastric carcinoma and gastric mucosa-associated lymphoid tissue lymphoma. There are some clinical reports regarding bacteremia caused by *Helicobacter* spp.^{1,2} *H. pylori* bacteremia has been described for the first time by Ndawula *et al.*³ in a 83-year-old woman with malignant lymphoma and without symptoms or signs suggestive of peptic ulcer. Another case report of *H. pylori* bacteremia has been reported by Han *et al.* in a 65-year-old woman with a history of gastric bleeding, breast cancer, anti-neoplastic chemotherapy, and prednisone use.⁴ Recently, Dutasta *et al.* reported a case of community-acquired colitis associated with bacteremia caused by *H. troglontum* in an immunocompetent patient.⁵ We report a case of bacteremia caused by *H. pylori* after stomach surgery for subtotal gastrectomy.

Case Report

The patient was a 68-year-old woman with ulcerated antral gastric cancer. She was admitted to the surgical unit of Humanitas Gavazzeni Hospital in preparation of surgery in September 2015. She had no significant medical history except for cholecystectomy, right saphenectomy and surgical intervention for bilateral otosclerosis. Medical examination at presentation indicates pale skin and moderate epigastric tenderness. The abdominal computed tomography (CT) revealed a well-known pathological thickening of the gastric antrum and adenopathy. The laboratory tests showed carcinoembryonic antigen (CEA) levels of 61.3 ng/mL. On day 2, the patient underwent a laparoscopy and subtotal gastrectomy with lymphadenectomy, intravenous cefazolin was administrated at the time of induction of anesthesia and for four days postoperatively. After surgery, on day 8, she developed fever (39°C) and elevated C-reactive Protein (CRP=6.00 mg/dL). Three sets of blood cultures (six bottles) were immediately collected and sent to our laboratory, and empiric intravenous antibiotic therapy was started (Levofloxacin 500 mg x2). After one day of incubation, only one anaerobic bottle (Bactec anaerobic/F, Becton Dickinson, Sparks, MD, USA) became positive. Gram staining showed the presence of a spiral Gram-negative bacterium. We immediately alerted the clinician and, based on the patient's clinical history, we supposed that the organism was *H. pylori*. Subculture of this organism was unsuccessful in sheep blood agar (Becton Dickinson), chocolate agar (Becton Dickinson), Campylobacter agar (Becton Dickinson) and Mac Conkey agar (Becton Dickinson) under aerobic and microaerophilic incubation conditions. Subsequently the blood culture was inoculated onto Schaedler agar (Becton Dickinson) in anaerobic environment and after 48 h a single type of colonies with characteristic morphology was obtained. The isolate was identified as *H. pylori* by MALDI-TOF (Bruker Daltonics, Germany). Susceptibility testing was performed with Etest® (bioMérieux, Marcy l'Etoile, France) and elaborated with EUCAST criteria. For the susceptibility test, *H. pylori* was inoculated in Mueller Hinton agar supplemented with defibrinated horse blood and -NAD (Becton Dickinson) and incubated for 48h in microaerophilic condition. The isolate was found to be sensitive to amoxicillin/amoxicillin-clavulanate, clarithromycin, levofloxacin, metronidazole and tetracycline. Based on the susceptibility test results and because the patient's conditions improved immediately, antibiotic treatment with levofloxacin was continued and was maintained until discharge.

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Discussion

The culture and rapid identification of *H. pylori* in blood cultures are still difficult.^{3,5} In our case the organism grew in only one anaerobic bottle after 24 h while in the previously reported case aerobic blood culture was positive after 4-6 days of incubation.^{4,5} This might be correlate to the microaerophilic nature of *H. pylori*. Furthermore it is difficult to obtain the *H. pylori* colonies on agar. In the previous cases the organism grew under microaerophilic conditions with Becton Dickinson Campy Pak Plus and on a brucella agar plate with 5% sheep blood, hemin and vitamin K.^{3,4} Regarding the identification of the bacterium it is interesting to note that the amplification of 16S rRNA has been utilizing as an alternative choice to biochemical identification test.⁴

Several factors are known to determine translocation of microbe across gastrointestinal barrier. *H. pylori* can affect the ecology of gastrointestinal microflora leading to bacterial overgrowth and physical disruption of intestinal mucosal barrier. These effects may contribute to invasion of the bloodstream by the bacterium.⁶ Unfortunately, in this case, *H. pylori* presence in stomach before or after surgery was not investigated. Previous study reported that gastrectomy is accompanied by the greatest risk (50%) for bacterial translocation among a great variety of intra-abdominal operations.⁷ Therefore we can speculate that our case of bacteremia may occur as a result of bacterial translocation during stomach surgery.

Our patient developed fever (39°C) on day 8, this might probably be related to the use of intravenous cefazolin at the time of induction of anesthesia and for four days postoperatively. Than the improper choice of maintain intravenous cefazolin postoperatively, in this particular case, contained *H. pylori* bacteremia. In effect cefazolin was not tested but susceptibility can be inferred from amoxicillin-clavulanic acid (0.032 µg/mL). Despite the transient nature of bacteremia, the presence of *H. pylori* in the stomach of our patient would still require specific treatment for eradication.

Conclusions

H. pylori bacteremia may occur as a rare complication in patients with undiagnosed

gastric infection,⁴ ulceration of the epithelium of the upper gastro-intestinal tract,³ from animals to humans and after stomach surgery.⁵ It is helpful that clinical laboratories are aware of the cultivation methods and identification methods for this highly fastidious organism. Further studies are necessary to elucidate the potential role of *H. pylori* presence in blood.

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