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Methicillin-Resistant *Staphylococcus aureus* (MRSA) Enteritis Associated with Prophylactic Cephalosporin Administration and Hypochlorhydria, after Subtotal Gastrectomy

To the Editor: *Clostridium difficile* pseudomembranous colitis (SMC) (1, 2), diarrhea, and enterocolitis are well-documented side-effects of antibiotic therapy. However, the number of cases of postoperative methicillin-resistant *Staphylococcus aureus* (MRSA) enterocolitis (3) among Japanese patients who have undergone gastric resection and received a third-generation cephalosporin has increased markedly since 1985 (4).

A 51-yr-old man presented with massive bleeding from hemorrhagic gastritis. He had been a heavy smoker for 20 yr, and his blood type was AB Rh(D) negative. After the failure of conservative management, including hemostasis under endoscopic control, subtotal gastrectomy was performed. Prophylaxis with cefazolin 3.0 g, three times a day, and an H₂-blocker were administered for 7 days postoperatively. During this period, the patient developed a cough productive of massive amounts of yellow-white sputum. Culture revealed infection with β -lactamase (+) methicillin-resistant *S. aureus* and *Pseudomonas aeruginosa*. On the 8th postoperative day, watery diarrhea developed, concomitant with initiation of refeeding. The diarrhea consisted of fragile green flakes in massive amounts of fecal fluid containing mucus (2600 ml daily). Fecal culture was positive for the same strains of β -lactamase (+) methicillin-resistant *S. aureus* and *P. aeruginosa* as recovered from the sputum. Proctosigmoidoscopic examination by flexible sigmoidoscope did not reveal SMC. The patient did not improve clinically until cefazolin was discontinued and the antibiotic changed to minocycline sensitive to the organisms cultured, despite the administration of strong antidiarrheal agents (tincture of opium and codeine phosphate).

Most patients with antimicrobial-associated enterocolitis suffer from diarrhea, fever, and/or abdominal cramps. The presentation of postoperative MRSA enterocolitis is similar. This case suggests that gut flora can proliferate, regardless of the generation of antibiotics, possibly resulting in colitis. In such cases, MRSA enterocolitis may develop when microorganisms from infected sputum are swallowed and are able to proliferate because the pH in the gastric remnant is greater than 5, with or without H₂ blockade. MRSA has been shown to be resistant to high pH gastric juice (5, 6). On the other hand, Hori *et al.* (4) have demonstrated, in a nationwide questionnaire survey on postoperative MRSA enterocolitis in Japan from 1985 to 1989, that 82.9% of cases of postoperative MRSA enterocolitis occurred in patients who had undergone gastrectomy, and a cephalosporin had been administered in all the cases. A strong correlation existed between MRSA enterocolitis and the intravenous administration of third-generation cephalosporins (25/35, 71.7%).

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Response to Drs. Borges and Klompmaker

To the Editor: The insights of Doctors Borges and Klompmaker and their colleagues draw attention to one of the unique differences between fibrolamellar hepatoma (FLH) and the usual type of hepatocellular carcinoma (HCC): racial or ethnic distribution. However, in my concluding remarks (1), I less than precisely questioned why FLH is found only in the United States. The observation I was attempting to highlight was that HCC is most commonly found on the Far East and in sub-Saharan Africa where it is responsible for 1,000,000 deaths annually (2). In contrast, FLH reports appear primarily among patients not originating or descending from the endemic areas of HCC. Doctor Borges and colleagues did highlight the few reported cases of FLH originating from the endemic areas. However, one of these reported cases is of a Belgium tourist in West Malaysia (3), not a resident of the endemic population. FLH appears to be found predominantly among Caucasian populations not residing in the endemic areas of HCC. This highlights the possible differences of etiology, genetics, exposures, or pathogenesis between FLH and HCC. Sumithron and Looi (4) have demonstrated race-related morphologic variations in HCC between the Chinese and Senoi aboriginal tribe in West Malaysia.

The case of FLH reported by Doctor Klompmaker and colleagues serves to strengthen the need for an international case registry. Such a data base is the only method to feasibly answer the many questions about FLH and HCC.

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