NOTES

Postoperative Wound Infection Associated with Vibrio parahaemolyticus in a Patient without Exposure to Seawater

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This report describes a case of wound infection associated with Vibrio parahaemolyticus. The patient had ingested steamed crabs 7 days before admission for surgical treatment of intestinal obstruction due to colon carcinoma. The Vibrio sp. was isolated from postoperative wound drainage as well as from stool. Recovery was uneventful.

During the past 20 years, several members of the genus Vibrio other than Vibrio cholerae have been associated with human disease. Of the non- V. cholerae species, Vibrio parahaemolyticus is most commonly recovered from intestinal sources (2). In the early 1950's, V. parahaemolyticus was recognized as a major cause of gastroenteritis in Japan (2). The organism is a gram-negative pleomorphic rod with a single polar flagellum; it is a halophilic facultative anaerobe capable of fermenting carbohydrates with gas production, and it yields green colonies on thiosulfate-citrate-bile salts-sucrose agar. It has been isolated from seawater, sediments, fish (including shellfish), and plankton (11). The organism is a cause of diarrheal disease resulting from improperly processed seafood.

Although it is primarily a gastrointestinal pathogen, isolation of V. parahaemolyticus from several extraintestinal sites has been reported (1, 3, 4, 7, 8, 10, 12, 14). We report the first case of which we are aware of postoperative wound infection associated with V. parahaemolyticus. Gut colonization was followed by wound infection subsequent to surgery for relief of intestinal obstruction in a patient with colon carcinoma.

A 49-year-old male was admitted to Hershey Medical Center in August 1987 with severe abdominal pain, obstruction, and signs of intestinal obstruction. A few days earlier, he had had a barium enema for evaluation of month-old symptoms of changes in bowel habits and flatulence. At that time, a diagnosis of tumor of the sigmoid colon was made. The patient was treated prophylactically with intravenous cefoxitin (2 g, followed by 1 g every 8 h) and metronidazole (850 mg, followed by 500 mg every 8 h), and an emergency colon resection for intestinal obstruction was performed. Antimicrobial prophylaxis was administered for 1 day and then discontinued. The tumor was diagnosed as primary adenocarcinoma of the colon.

Approximately 24 h postoperatively, the patient developed a fever of 38.5°C which continued into the following day. A foul-smelling discharge was observed from the abdominal wound, and dark brown liquid stool was passed through the colostomy site. Laboratory findings revealed a total leukocyte count of 14.9/mm³ (neutrophils, 54%; bands, 33%; lymphocytes, 7%; and monocytes, 6%). Therapy with intravenous metronidazole (dosage as described above) was reinstituted and continued for 2 days. Gram stain of the abdominal discharge yielded many polymorphonuclear leukocytes and gram-negative rods. Overnight cultures at 35°C on 5% sheep blood, colistin-nalidixic acid, MacConkey (aerobic), and chocolate (air plus 10% CO₂) agars (all plates purchased from BBL Microbiology Systems, Cockeysville, Md.) yielded a few colonies of Escherichia coli and group D streptococci and moderate growth of V. parahaemolyticus. Blood and urine cultures were sterile.

Two days later, the patient became afebrile and the abdominal wound was free of discharge. A stool culture on postoperative day 6 also yielded V. parahaemolyticus. The remainder of the patient’s course was uneventful: the loose stools subsided, and he was discharged in satisfactory condition on postoperative day 10. Further questioning revealed a history of ingestion of steamed crabs at a Maryland coastal resort approximately 7 days before admission. The patient did not appear for follow-up stool culture. Infection with V. parahaemolyticus is not reportable in Pennsylvania; the incident was not investigated by public health officials.

The Vibrio sp. was identified by the AutoMicrobic system gram-negative identification card (Vitek Systems, Inc., Hazelwood, Mo.) and by API Rapid NFT and API 20E (Analytab Products, Plainview, N.Y.). Identification was confirmed by James Kaper (Center for Vaccine Control, Baltimore, Md.) and Mitsuaki Nishibushi (Osaka University, Osaka, Japan). Characteristics of the bacterium are listed in Table 1. The organism was susceptible to amikacin (≤1.0 µg/ml), chloramphenicol (≤1 µg/ml), gentamicin (≤0.5 µg/ml), tobramycin (≤2 µg/ml), cefotaxime (≤8 µg/ml), and trimethoprim-sulfamethoxazole (≤10 µg/ml); partially resistant to cefoxitin (16 µg/ml) and ticarcillin (64 µg/ml); and resistant to ampicillin (≥16 µg/ml) and cefazolin (≥16 µg/ml) (Vitek Systems gram-negative susceptibility card).

V. parahaemolyticus is part of the normal flora of estuaries and other coastal waters throughout most of the world (2). In Japan, where a large amount of raw seafood is consumed, V. parahaemolyticus has been recognized as the causative agent of >70% of all cases of gastroenteritis (5). In the United States, the first documented case of V. parahaemolyticus gastroenteritis was related to consumption of...
improperly cooked seafood (11). Since then, a large number of cases have been reported in coastal states (1, 3).

*V. parahaemolyticus* is usually regarded as an intestinal pathogen. Illness is usually self-limiting, with a median duration of 3 days (9). A dysenteric syndrome with mucus-sanguinous stools has been described in Bangladesh and India (2). In 1969, the first report of *V. parahaemolyticus* extraintestinal infection was published (2). Since then, several reports of isolation from ears (8), eyes (12), sputum (14), wounds (4, 7, 10), synovial fluid (1), and blood (13) have appeared in the literature. All wound infections have involved previous exposure to seawater.

The present report describes the first isolation of which we are aware of *V. parahaemolyticus* in a draining surgical wound. The small number of *E. coli* and streptococci in the specimen argues against pathogenicity. The subsequent isolation of *V. parahaemolyticus* from stool suggests wound infection due to leakage of bowel content, probably at the time of surgery. The patient was probably primarily infected by ingestion of improperly cooked crabs. Because he failed to appear for follow-up examination, we have no data on subsequent stools. The patient recovered completely in 4 days; during and after surgery, he had been receiving drugs to which *V. parahaemolyticus* was resistant or partially resistant. Although *V. parahaemolyticus* was the major isolate from postoperative wound drainage, its precise pathogenic role in this site could not be delineated. The patient was treated with antibiotics which are not ideal for this organism, and drainage may have resolved spontaneously.

As in the case described here, Kanagawa-negative strains of *V. parahaemolyticus* have been isolated from extraintestinal infections rather than from symptomatic intestinal infections, which are usually associated with Kanagawa-positive strains (2, 4).

Symptomatic gastroenteritis due to *V. parahaemolyticus* did not occur in this patient, and the liquid nature of the stool observed postoperatively day 2 was transient and did not indicate true diarrhea. Asymptomatic gut colonization with *V. parahaemolyticus* has been described previously (2).

This report emphasizes that *V. parahaemolyticus* infection should be considered a possibility in patients who have ingested improperly cooked seafood, especially before gastrointestinal surgery for any reason. A careful history should be elicited from such patients, and stools should be cultured on thiosulfate-citrate-bile salts-sucrose agar. Failure to recognize preoperative intestinal colonization may lead to wound and possibly systemic infection with this organism.

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**LITERATURE CITED**


