**Vibrio vulnificus** Endometritis

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**Vibrio vulnificus** most frequently causes wound infections contracted after exposure to seawater or primary septicemias resulting from the consumption of raw oysters. We report a case of endometritis caused by **V. vulnificus**. The infection was apparently acquired during the act of sexual intercourse in seawater in an area in which **V. vulnificus** has been frequently isolated. The efficacy of treatment with an antimicrobial regimen which included tetracycline is discussed.

**CASE REPORT**

A 32-year-old woman was seen in the University of Texas Medical Branch Family Medicine Clinic on 6 September 1983, with a 24-h history of severe pelvic pain described by the patient as “worse than having a baby.” She also complained of right lower quadrant pain, low back pain, frequent urination with burning, and constant cramping. Upon physical examination the patient appeared to be “toxic” with a temperature of 38.4°C and blood pressure of 116/82 mmHg (1 mmHg = 133.3 Pa). Her lungs were clear and her abdomen was nontender. Upon pelvic examination there were no external lesions, but a nonbloody, purulent vaginal discharge was noted. The cervix was mobile with no masses, but marked adnexal guarding and tenderness were noted. The uterus was also very tender. An intrauterine device which had been in place for 1 year was removed through the cervix and sent to the microbiology laboratory for aerobic culture. The patient initially received 4.8 x 10⁶ U of penicillin G in divided doses intramuscularly. She also received oral doxycycline, 100 mg per day for 14 days. She was seen in the clinic again 2 days later and was much improved with little discomfort.

The patient was seen in the clinic again on 29 November when she was asymptomatic, and an endocervical culture at this time yielded only normal flora.

After isolation of **V. vulnificus** from this unusual site (endocervix), the patient was interviewed as to possible sources of exposure to this marine bacterium. The patient had not eaten any seafood in the 2 weeks before the onset of symptoms. However, about 18 h before the onset of pelvic pain she had been swimming in Galveston Bay and had engaged in sexual intercourse while in the water.

**MATERIALS AND METHODS**

Purulent material from the intrauterine device was cultured on blood, chocolate, and MacConkey agar plates and incubated at 37°C for 48 h. **V. vulnificus** was identified by methods and criteria described previously (8). Antimicrobial susceptibilities were tested by standardized disk diffusion (1) and macro-broth dilution (10). The isolate was tested for **V. vulnificus**-specific antigen (M. Nishibuchi and R. J. Seidler, Abstr. Annu. Meet. Am. Soc. Microbiol. 1982, C111, p. 290) by slide agglutination.

**RESULTS**

After 24 h of incubation, all plates yielded heavy growth of a fermentative, oxidase-positive, gram-negative rod-shaped bacterium identified as **V. vulnificus** biogroup 1 (8) based on the following reactions from standard laboratory media and methods. The isolate produced an alkaline slant over an acid butt without gas or H₂S on a triple-sugar iron agar slant. There was growth on thiosulfate-citrate-bile salts agar and MacConkey agar but not on salmonella-shigella agar. There was no growth in 1% peptone broth without added NaCl or with 10% NaCl, but there was growth with 3 and 6% NaCl. Lysine and ornithine decarboxylases were produced but not arginine dihydrolase. Nitrate was reduced and gelatin and esculin were hydrolyzed. The isolate grew on Simmons citrate agar and produced indole. Acetoin (Voges-Proskauer reaction) was not produced and urea was not hydrolyzed. Acid was produced from D-glucose, lactose, D-mannitol, maltose, cellobiose, salicin, and D-amygdalin. No acid was produced from sucrose, D-xylene, L-arabinose, adonitol, D-inositol, or D-sorbitol. The isolate was susceptible to the vibriostatic compound O/129 (10-μg disk) and it was agglutinated by **V. vulnificus**-specific antiserum.

The **V. vulnificus** isolate was resistant to colistin, had an indetermimant response to kanamycin and tobramycin, and was susceptible to ampicillin, carbenicillin, cephalexin, chloramphenicol, gentamicin, sulfamethoxazole-trimethoprim, and tetracycline by the disk diffusion method. The MICs of penicillin and doxycycline were 3.9 and 0.1 μg/ml, respectively, as determined by macro-broth dilution.

An alpha-hemolytic Streptococcus isolate, not group B or D, which was considered normal vaginal flora, was the only other organism recovered from aerobic culture. No anaerobic cultures were done; therefore, it is not known whether anaerobic bacteria contributed to the infectious process.
DISCUSSION

The source of *V. vulnificus* in this infection was undoubtedly seawater introduced into the vagina during sexual intercourse while in the water. *V. vulnificus* has repeatedly been isolated from Galveston Bay with a peak incidence during periods of warm temperatures and moderate salinities as was the case during the time of exposure by the patient (6, 7). *V. vulnificus* strains isolated from marine environments have been shown to be indistinguishable from clinical isolates based on DNA homologies and animal pathogenicity studies (9).

The antibiotic therapy in this case was aimed toward *Neisseria gonorrhoeae* as the most likely etiological agent based on the clinical presentation. The *V. vulnificus* isolate from the patient was susceptible to tetracycline by disk diffusion testing, and broth dilution testing revealed MICs of 3.9 μg/ml for penicillin and 0.1 μg/ml for doxycycline. Therefore, the therapy given was also effective against the *V. vulnificus* isolate. Tetracycline or an aminoglycoside, either alone or in combination with penicillins, has been used successfully in other cases of *V. vulnificus* infections (3, 5). Tetracycline was recently found to be the most effective therapy in mice experimentally infected with *V. vulnificus* (4). The excellent therapeutic response of our patient confirms the effectiveness of tetracycline in the treatment of human infections.

Although *V. vulnificus* is most frequently associated with wound infections or primary septicemia (2), other clinical presentations have been described, including pneumonia and sepsis in a drowning victim (7) and a corneal ulcer. Endometritis can now be added to the list of “atypical” infections caused by *V. vulnificus*. As more cases are recognized, it is becoming evident that *V. vulnificus* as well as other *Vibrio* species may cause a variety of clinical manifestations, and physicians should be alert to this fact in patients with exposure to raw seafood or marine environments.

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LITERATURE CITED