A Case of Non-O1 and Non-O139 \textit{Vibrio cholerae} Septicemia with Endophthalmitis in a Cirrhotic Patient

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SUMMARY: Septicemia of \textit{Vibrio} spp. such as non-O1 \textit{Vibrio cholerae} presented with diarrhea, fasciitis, cellulitis or otitis media are common in cirrhotic patients (Lin, C.-J., Chiu, C.-T., Lin, D.-Y., et al., Am. J. Gastroenterol., 91, 336-340, 1996). It may result from a lower C3/C4 level, a lower serum ferritin level or opsonophagocytosis dysfunction. High mortality in such cases has been noted. However, endophthalmitis is rare in such patients, and has never been reported. We present a cirrhotic patient of non-O1 and non-O139 \textit{V. cholerae} septicemia complicated with endophthalmitis.

A 60-year-old woman had hepatitis C virus related liver cirrhosis, Child-Pugh class B, with a history of esophageal variceal bleeding and hepatomecephalopathy. She had never received interferon-\alpha treatment. She was admitted due to diffuse abdominal pain, fever, chills, and dizziness, which she had been experiencing for one day. She and her family reported no recent change of bowel habit or symptoms of urinary tract infection. On examination, she was febrile with a temperature of 38.2°C, a heart rate of 84 bpm, a respiratory rate of 18/min and blood pressure of 98/50 mm Hg. Her abdominal pain presented with diffuse tenderness without rebound tenderness or muscle guarding. The patient had a leukocyte count of 7,400/mm$^3$ (neutrophil 65%, band form 25%, lymphocyte 10%), hemoglobin 7.1 g/dL, and platelet count of 63,000/mm$^3$. Her blood chemistry revealed albumin 1.8 g/dL (normal range, 3.5-5.0 g/dL), alkaline phosphatase 238 U/L (normal range, 50-190 U/L), total bilirubin 3.0 mg/dL (direct form, 1.2 mg/dL), alanine aminotransferase 75 U/L (normal range, 4-44 U/L), amylase 54 U/L (normal range, 20-140 U/L), lipase 26 U/L (normal range, 13-60 U/L), ammonia 96 ug/dL (normal range, 0-70 ug/dL), blood urea nitrogen 17 mg/dL (normal range, 5-25 mg/dL), creatinine 0.8 mg/dL (normal range, 0.7-1.4 mg/dL), and C-reactive protein 0.8 mg/dL (normal range, <0.5 mg/dL). The coagulation profiles included a prothrombin time of over 100 s (control, 10.5 s), and a partial thromboplastin time of over 100 s (control, 29 s). Her blood gas revealed metabolic acidosis with lactate 104 mg/dL. Under tentative diagnosis of septic shock, an empiric antibiotic, flomoxef, was administrated. However, respiratory failure developed and endotracheal intubation was performed. She was admitted to the intensive care unit. One day later, swelling over the bilateral orbital area with erythematous change developed (Figure 1) and blood culture yielded non-O1 and non-O139 \textit{Viber cholerae} that was identified by automated Vitek by using GNI+ cards (bioMérieux Vitek, Hazelwood, Mo., USA).

An ophthalmologist was consulted and endophthalmitis was suspected. Culture of vitreous fluid yielded non-O1 and non-O139 \textit{V. cholerae} 2 days later. She received ceftriaxone (2 g every 12 h) and ceftazidine plus vancomycin intravitreal injection. In the meantime, she developed hemorrhagic bulla over both legs (Figure 2). Because her clinical condition was stable, debridement was not performed. Her condition improved, and extubation of the endotracheal tube was successful after 25 days’ treatment. She was transferred to a general medical ward. However, she eventually died during this hospital stay due to hospital-acquired pneumonia (sputum culture: pan-drugs resistant \textit{Acinetobacter baumannii}).

Infection with \textit{Vibrio} spp., Gram-negative rods, is virulent and fatal in patients with hepatic disease, diabetes mellitus, adrenal insufficiency, or immunocompromised conditions (1-
It was a very important pathogen in Taiwan, an island with a high prevalence of hepatitis B virus infection (17.3%) (6). Cirrhotic patients were susceptible to non-O1, non-O139 *V. cholerae* or *Vibrio vulnificus* infection which may be presented with primary bacteremia, acute gastroenteritis, cellulitis, or necrotizing fasciitis (7-9). The mortality rate ranged from 23.8 to 61.5% among cirrhotic patients (7,10). Initial symptoms may manifest as fever (81%), abdominal pain (52.4%), and ascites (95.2%) (7). In addition, hypothermia has been reported (fever or hypothermia 88.9%) (11). We collected cases of non-O1 and non-O139 *V. cholerae* infection in Taichung Veterans General Hospital and found that cirrhotic patients were susceptible to non-O1 and non-O139 *V. cholerae* and had a high mortality rate (Table 1). The reason for the high prevalence of *Vibrio* spp. infection in cirrhotic patients remains unclear and may be caused by poor bactericidal activity, impaired filtration function in the cirrhotic liver, or a rising serum iron level (12). In cirrhotic patients, a lower serum complement concentration was noted, and it correlated negatively with the Child-Pugh score (13,14). A low concentration of C3 and C4 also resulted in impaired bactericidal activity, impaired filtration function in the cirrhotic liver, or a rising serum iron level (12). In cirrhotic patients, a lower serum complement concentration was noted, and it correlated negatively with the Child-Pugh score (13,14). A low concentration of C3 and C4 also resulted in impaired bactericidal activity, impaired filtration function in the cirrhotic liver, or a rising serum iron level (12).

### Table 1. Demographic data, underlying disease, diagnoses, and prognosis in patients with non-O1 and non-O139 *Vibrio cholerae* infection

<table>
<thead>
<tr>
<th></th>
<th>Bacteremia (%)</th>
<th>Non-bacteremia (%)</th>
<th>p</th>
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<tbody>
<tr>
<td>Gender:</td>
<td></td>
<td></td>
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<tr>
<td>Male:</td>
<td>12 (66.7)</td>
<td>13 (72.2)</td>
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<tr>
<td>Underlying disease:</td>
<td></td>
<td></td>
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<tr>
<td>Cirrhosis</td>
<td>14 (77.8)</td>
<td>0 (0.0)</td>
<td>&lt;0.001</td>
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<tr>
<td>Malignancy</td>
<td>3 (16.7)</td>
<td>2 (11.1)</td>
<td>1.000</td>
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<td>Biliary stone:</td>
<td>1 (5.6)</td>
<td>1 (5.6)</td>
<td>1.000</td>
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<tr>
<td>Congestive heart failure:</td>
<td>1 (5.6)</td>
<td>0 (0.0)</td>
<td>1.000</td>
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<tr>
<td>Diabetes mellitus:</td>
<td>3 (16.7)</td>
<td>3 (16.7)</td>
<td>1.000</td>
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<tr>
<td>Hematologic disease:</td>
<td>1 (5.6)</td>
<td>1 (5.6)</td>
<td>1.000</td>
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<tr>
<td>Other immunocompromised condition:</td>
<td>0</td>
<td>2 (5.6)</td>
<td>0.486</td>
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<tr>
<td>Mortality:</td>
<td>6 (33.3)</td>
<td>0 (0.0)</td>
<td>0.009</td>
</tr>
</tbody>
</table>

1) One had hepatoma, one had cholangiocarcinoma, one had prostate cancer.
2) One had colon cancer, one had neuroblastoma.
3) Aplastic anemia.
4) Myelodysplastic syndrome and colon cancer.
5) One had Takayasu's disease, one had systemic lupus erythematosus (SLE).

REFERENCES