Report

An outbreak of acute gastroenteritis due to Aeromonas sobria in Benghazi, Libyan Arab Jamahiriya

A.A.I. Taher,¹ B.N. Rao,¹ K.G. Alganay ¹ and M.B. El-Arabi²

SUMMARY We report an outbreak of acute diarrhoea due to Aeromonas sobria in Benghazi which occurred during a 1-month period in 1997. Of 69 patients admitted with acute gastroenteritis, 26 were positive for A. sobria based on the production of gas from glucose, the production of acetoin, hydrogen sulfide and lysine decarboxylase and on aesculin hydrolysis and fermentation of arabinose and salicin. The strains were sensitive to chloramphenicol, co-trimoxazole, tetracycline and gentamicin but resistant to ampicillin and carbenicillin. We were unable to trace the source of the infection.

Introduction

Aeromonas spp. are ubiquitous in soil and untreated water, causing diseases of fish and amphibians. These facultatively anaerobic rod-shaped bacteria in the family Vibrionaceae are today widely considered as potential enteric human pathogens [1,2]. They were considered by some authors as opportunistic pathogens in immunocompromised patients [7] but today they are recognized as the cause of a spectrum of gastrointestinal diseases from self-limiting diarrhoea to acute, persistent dysentery [1,3]. They have been isolated from children with acute diarrhoea and from adults with travellers’ diarrhoea. Enterotoxins, cytotoxins and haemolysins have been suggested as the possible virulence factors of Aeromonas spp. [7], although their role in pathogenesis is not clear. They occur in untreated and chlorinated water, ground beef, pork, fish, shellfish, poultry produce and raw milk. We report an outbreak of acute diarrhoea due to A. sobria in Benghazi, which is the second largest city in the Libyan Arab Jamahiriya.

Patients and methods

During the 1-month period, 2 August to 2 September 1997, 69 patients were admitted to Jamahiriya Hospital with acute gastroenteritis and were investigated for the presence of enteric pathogens. A faecal specimen was collected from each patient immediately after admission and before treatment. Undiluted and fresh samples were immediately inoculated with MacConkey agar, salmonella–shigella agar and selenite faecal broth for the isolation of

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normal enteric pathogens. An ampicillin
blood agar (10 mg/L of ampicillin) was also
included routinely for the isolation of Aeromo-

nas spp. Whenever necessary, subcultures
were taken from the selenite faecal
broth. Aeromonas spp. colonies were
screened for oxidase by Kovac’s method.
Oxidase-positive, shining colonies were
transferred to a tube of Kliger iron agar
and to a semisolid urea medium. Motile or-
ganisms that produced indole but not ure-
ase, and fermented glucose rapidly but
lactose slowly, were further tested with
API-20E (API system GA, La-Balmes-
Grottes, Montalieu-Vercieu, France).
Identification of Aeromonas spp. was con-
firmed by hydrolysis of arginine and lique-
faction of gelatin, in the absence of
ornithine decarboxylase. Identification of
Aeromonas spp. to species level was per-
formed based on the production of gas from
glucose, the production of acetone, hydro-
gen sulfide and lysine decarboxylase and
on acsculin hydrolysis and fermentation of
arabinose and salicin. Antibiotic resistance
was assessed by the Kirby–Bauer disk dif-
fusion method.

Results

Of the 69 patients admitted, 28 (40.6%) were positive for A. sobria. Of those, 13 were males and 15 were females aged be-
tween 18 years and 72 years (mean 45
years). They were admitted with acute, wa-
tery diarrhoea often associated with vomit-
ing, abdominal pain, fever and acidosis
(Table 1).

A. sobria was highly sensitive to
chloramphenicol, co-trimoxazole, tetracy-
cline and gentamicin, and resistant to ampi-
cillin and carbenicillin.

Discussion

Previous studies have shown that Aeromo-

nas spp. are isolated frequently from the
faeces of patients with diarrhoea, but they
are often missed when standard bacterio-
logical methods are used to examine faeces,
and it is only when a microbiology laborato-
ry is alerted to look for them that the
organisms are likely to be detected.

The reported prevalence of Aeromonas
spp. in human faeces varies widely de-
pending on the climate, the quality of
drinking water, the hygiene of the popula-
tion under study and the methods of bac-
terial culture used. Therefore, it is difficult
to make a valid comparison of isolation
rates.

In our study, the male:female ratio of A.
sobria infection was 1.3:1.5. The mean age
was 45 years (age range 18–72 years). Our
patients presented with clinical symptoms of
acute, watery diarrhoea of less than 1
week duration (28 patients), vomiting (26),
fever (24) and abdominal pain (24). Similar
findings have been observed elsewhere
around the world [4–6]. Our strains were
highly sensitive to chloramphenicol, co-tri-

moxazole, tetracycline and gentamicin and
resistant to ampicillin and carbenicillin.
This is in agreement with results obtained
by other workers [7,8]. We were unable to
trace the source of infection in our study.

The findings in the present study fur-
ther support the concept that A. sobria

<table>
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<tr>
<th>Table 1 Clinical features of patients (n = 28) with Aeromonas sobria infection</th>
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<tbody>
<tr>
<td>Clinical feature</td>
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<td>----------------------------</td>
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<tr>
<td>Acute watery diarrhoea</td>
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<tr>
<td>Vomiting</td>
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<tr>
<td>Abdominal pain</td>
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<td>Fever (&gt; 38 °C)</td>
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could play an important role in acute diarrhoeal diseases. It is hoped that clinical microbiologists will increase their interest and search for Aeromonas spp. or other newer causative agents of acute diarrhoeal diseases worldwide.

Blood agar plates containing 10 mg/L of ampicillin should be included as routine in the bacteriological investigation of faeces if the isolation rate of Aeromonas spp. is not to be underestimated. Studies of large numbers of patients and correlation of clinical data with faecal isolation of enteropathogenic Aeromonas spp. should clarify whether these organisms are significant enteric pathogens.

References