Report

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

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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, 28 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 opportunist pathogens in immunocompromised patients [*1*] 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. [*1*], 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 *Aeromonas* 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 Kligler iron agar and to a semisolid urea medium. Motile organisms that produced indole but not urease, and fermented glucose rapidly but lactose only slowly, were further tested with API-20E (API system GA, La-Balmes-les-Grottes, Montalieu-Vercieu, France). Identification of *Aeromonas* spp. was confirmed by hydrolysis of argenine and liquefaction of gelatin, in the absence of ornithine decarboxylase. Identification of *Aeromonas* spp. to species level was performed 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. Antibiotic resistance was assessed by the Kirby–Bauer disk diffusion 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 between 18 years and 72 years (mean 45 years). They were admitted with acute, watery diarrhoea often associated with vomiting, abdominal pain, fever and acidosis (Table 1).

A. sobria was highly sensitive to chloramphenicol, co-trimoxazole, tetracycline and gentamicin, and resistant to ampicillin and carbenicillin.

Table 1 **Clinical features of patients (n = 28) with *Aeromonas sobria* infection**

Clinical feature	No.	%
Acute watery diarrhoea	28	100.0
Vomiting	26	92.9
Abdominal pain	24	85.7
Fever (> 38 °C)	24	85.7

Discussion

Previous studies have shown that *Aeromonas* spp. are isolated frequently from the faeces of patients with diarrhoea, but they are often missed when standard bacteriological methods are used to examine faeces, and it is only when a microbiology laboratory 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 depending on the climate, the quality of drinking water, the hygiene of the population under study and the methods of bacterial 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-trimoxazole, 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 further support the concept that *A. sobria*

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.

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