NON-O1 *VIBRIO CHOLERAE* SEPTICAEMIA : A CASE REPORT

K K Tan, K S Sin, A J Ng, H Yahya, P Kaur

ABSTRACT

Non-O1 vibrio cholerae infections are associated with sporadic cases of gastroenteritis and extraintestinal infections. Septicaemia due to non-O1 vibrio cholerae is rare and are mainly reported in adults, particularly in immunocompromised patients. We report a case of non-O1 vibrio cholerae septicaemia and gastroenteritis in an 8-year-old child. The patient presented with bloody diarrhoea, fever and severe dehydration. Non-O1 vibrio cholerae were isolated from blood and stool cultures. The clinical course was uneventful after starting appropriate rehydration and supportive therapy.

Keywords: *vibrio cholerae, vibrio infections, septicaemia.*

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INTRODUCTION

Non-O1 *vibrio cholerae* are organisms that are biochemically indistinguishable from *vibrio cholerae* but do not agglutinate in vibrio O group 1 antiserum[1]. Non-O1 serotypes are mostly associated with sporadic cases of diarrhoea and extraintestinal infections[2]. A high rate of inapparent infection and a prolonged gallbladder carrier state are well recognised[3]. Septicaemia is rarely associated with non-O1 *vibrio cholerae*[4]. Available data in the English language literature suggest that it is uncommon in children. A case of non-O1 *vibrio cholerae* septicaemia and gastroenteritis in a child is reported.

CASE REPORT

An eight-year-old Indian girl was admitted with a one day history of bloody diarrhoea, abdominal cramps and fever. She had been drinking unboiled water from a pond near her house since her family shifted into the area about two weeks prior to her illness. She comes from a poor family and is third among six children. Her father is a labourer and her mother is a housewife. Her immunisation history was appropriate for her age. On examination, she was ill and toxic with severe dehydration. She was also pale and drowsy. Jaundice, finger clubbing and cutaneous stigmata of liver disease were not detected. The temperature was 38.5°C, pulse rate 150/min, respiratory rate 40/min and blood pressure 80/50 mmHg. Her height was 97cm (below third centile) and weight 12kg (below third centile). There was no significant lymphadenopathy. The abdomen was not distended and there was no hepatosplenomegaly. Per rectal examination showed blood-stained stools.

The haemoglobin was 5.7 g/dl, haematocrit 17.5%, total white cell count 2,800/mm^3 with no evidence of leukaemic blast cells, platelets 38,000/mm^3, blood urea 11.4 mmol/l, serum sodium 106 mmol/l, serum potassium 3.6 mmol/l and serum calcium 1.6 mmol/l. Arterial blood gas showed severe metabolic acidosis. The serum protein was 40g/l, serum albumin 14g/l, alkaline phosphate 294 Iu/l and serum alanine aminotransferase 56 Iu/l. The serum immunoglobulins were within normal limits and screening for human immunodeficiency virus was negative. The organism in the blood, stool and surface water cultures from the pond were identified as non-O1 *vibrio cholerae* by its profile in the API-20NE system (BioMerieux SA, France) and failure to agglutinate in *vibrio cholerae* O1 antisera (Wellcome Diagnostics, Dartford, UK). It was sensitive to ampicillin, chloramphenicol, cotrimoxazole and tetracycline. *Plesiomonas shigelloides* sensitive to amipicillin, chloramphenicol and cotrimoxazole were also isolated from both stool and surface water samples.

Intravenous rehydration and correction of electrolyte imbalance were started. Blood transfusion and a course of cotrimoxazole were also administered. Nutritional support to correct the malnutrition was commenced during recovery and food aid was arranged prior to discharge. The clinical course was uneventful and the patient was discharged well. She had remained well and was thriving when she was reviewed six months later.

DISCUSSION

Strains of *vibrio cholerae* are classified according to O antigen groups[5]. O group 1 (O1) strains are the aetiologic agents for cholera while all other strains are grouped together loosely as non-O1 *vibrio cholerae*. The principal reservoir for non-O1 *vibrio cholerae* appears to be the aquatic environment and it is likely that these organisms are present in coastal and estuarine areas throughout the world[6]. A common epidemiologic vehicle in cases of human enteritis due to non-O1 *vibrio cholerae* is raw or undercooked shellfish and the organism has been isolated from oysters, crab and shrimp[6,7]. Contaminated water has also been implicated in transmission of the infection[8], as in this patient. Non-O1 *vibrio cholerae* has been associated with a spectrum of gastrointestinal illness ranging from mild watery diarrhoea to febrile enteritis with bloody diarrhoea [9,10]. Gastroenteritis is the

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most common clinical manifestation of non-O1 *vibrio cholerae* infection[6]. Non-O1 strains have been isolated from the blood, wounds, ear, sputum, biliary tract, peritoneal and cerebrospinal fluids[1].

In contrast to *vibrio cholerae* O1 which rarely causes infection outside the gastrointestinal tract, non-O1 strains have been associated with systemic infection, particularly in the immunocompromised host[11]. Septicaemia is rarely associated with non-O1 *vibrio cholerae* and tends to occur in the very young or in older populations[4,6]. Most of the cases of septicaemia reported in the English language literature are in adults. The majority of these cases have involved immunocompromised patients, particularly those with haematologic malignancies or cirrhosis[6]. We could not find an underlying illness in our patient. It is likely that host susceptibility is a critical factor in determining whether septicaemia will occur[6]. Other known predisposing factors are malnutrition[11], which may be the factor in this case, and splenectomy[12]. The mortality rate among reported cases in one review was 61.5%, all the deaths were in adults [11]. In contrast to the high mortality in adults, the outcome in children appears more favourable. In the same review by Safrin in 1988, 14 published cases of non-O1 *vibrio cholerae* septicaemia were documented in the English language literature including three cases in children[11]. Out of these three cases, the outcome in only two children were given and both survived. Another paediatric case documented by Thisyakorn in 1990 also survived[12], as was also the case in this report.

Data on source of infection in cases of non-O1 *vibrio cholerae* septicaemia are limited and it is postulated that vibrio species responsible for septicaemia can be acquired through the gastrointestinal tract in susceptible hosts[6,12]. Although *Plesiomonas shigelloides* was also isolated from both the stool and surface water samples in this case, its role as an enteropathogen remains controversial[7]. The disease is usually self-limiting and treatment is aimed at repletion of electrolyte losses[3]. Extraintestinal and blood infections due to non-O1 *vibrio cholerae* require antimicrobial therapy[7]. Although the non-O1 group is associated with sporadic cases of infection, there are recent evidence to suggest an epidemic potential[13,14]. This case report highlights an uncommon type of septicaemia in children and the need to consider non-O1 *vibrio cholerae* in cases of gastroenteritis, particularly when there is a chronic predisposing factor such as malnutrition.

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