RESEARCH REPORT

AN OUTBREAK OF GASTROENTERITIS DUE TO *VIBRIO CHOLERAE* 0139 IN PONDICHERRY, SOUTH INDIA

N Vijayalakshmi,[1]RS Rao[1], S Sujatha[1], A Hamid[2], TK Dutta[2], and AK Das[2]

[1]Department of Microbiology; [2]Department of Internal Medicine, Jawaharlal Institute of Post-graduate Medical Education and Research, Dhanwantari Nagar, Pondicherry, 605 006, India

Vibrio cholerae non 01, earlier called as non agglutinable vibrios (NAG vibrios) have been isolated from aquatic environment (West and Lee, 1982; De Paola *et al.* 1983), individual cases (Gaines *et al,* 1964, Chatterjee *et al,* 1970; Jesudason *et al,* 1991) and during outbreaks of choleraic diarrhea (Aldova *et al,* 1968).

Here we report an outbreak of gastroenteritis due to *V. cholerae* 0139 in Pondicherry, South India. The outbreak lasted for 10 weeks beginning from middle of October, 1992. During the period, a total of 237 cases were admitted to JIPMER (tertiary care hospital) with gastroenteritis, of whom 100 were females. The mean age of all the patients was 39.20 ± 1.06 (SEM) years (range 0.02 to 76 years). All cases recovered following therapy, except for a 60 year old female patient, who died of hypovolemic shock.

The organisms isolated from these cases were designated as *Vibrio cholerae* non 01 as they did not agglutinate with *Vibrio cholerae* 01 antiserum. Out of 196 stool specimens submitted for bacteriological culture *Vibrio cholerae* non 01 was isolated from 43 specimens. One specimen yielded *Vibrio cholerae* El Tor (Ogawa).

The clinical picture and other details of the culture positive cases (*Vibrio cholerae* non 01) are shown in Table 1. One patient was febrile, from whose stool specimen *Salmonella typhi* was also isolated. The duration of hospitalization ranged between 1 to 8 days with a mean of 3.95 ± 0.18 (SEM)) days. All these cases received intravenous fluid apart from oral rehydration solution and a course of tetracycline.

A majority of the *Vibrio cholerae* non 01 isolates (95%) was obtained as pure growth on primary culture using TCBS medium. The biochemical reactions of the isolates were as follows: Indole (+ve), acid only in glucose, sucrose, mannitol and mannose, arabinose not fermented, citrate (±), urease(−ve), oxidase(+ve), Voges-Proskauer(±), growth in salt free medium (±ve), amino acid decarboxylase (ornithine −ve, lysine +ve), dihydrolase (arginine -ve) and Kligler iron agar (K/A, gas -ve, H_2S -ve). None of these strains agglutinated with *Vibrio cholerae* Ogawa or Inaba antisera. All the strains showed *in vitro* susceptibility to tetracycline and gentamicin by Kirby Bauer's technique. Twenty-four of the isolates were tested for hemagglutination and hemolytic activity, against RBCs from sheep, fowl, guinea-pig, rabbit and rat (Table 2).

Thirty of the isolates were sent to Centers for Disease Control, Atlanta, Georgia, USA for sero-

Table 1

Clinical manifestations of the male and female cases.

Clinical features	Males n = 26	Females n = 17
Watery diarrhea	26	17
Rice water stool	01	02
Blood and mucus in stool	00	01
Vomiting	25	15
Abdominal pain	00	03
Fever	00	01
Oliguria	19	11
Dehydration		
mild	06	04
moderate	06	03
severe	13	10
Peripheral circulatory failure	03	04

Table 2

Results of hemagglutination and hemolysis tests for 24 strains of *V. cholerae* 0 139.

Test	No positive out of 24 strains tested with 1% RBC suspension of					
	Sheep	Guinea pig	Fowl	Rat	Rabbit	Mouse
Hemagglutination	10	17	12	09	12	14
Hemolysis	00	13	08	05	11	ND*

* ND : Not done

typing. All the isolates were typed as serogroup 0139, a hitherto unknown serogroup. The enteropathogenicity of the isolates is under study.

None of the patients gave history of consuming sea food, therefore the same could not be implicated as the source of infection.

Hitherto, only *V. cholerae* El Tor had been isolated from cases of cholera in Pondicherry (Rao and Vijayalakshmi, 1985). But this is the first time an outbreak of cholera due to a new sero-group, 0139 has been encountered. Besides Pondicherry, there are reports of increased isolation of *V. cholerae* 0139 from other parts of India and Bangladesh (Ramamurthy *et al,* 1993; Albert *et al,* 1993; Bhattacharya *et al,* 1993).

The present situation bears a striking similarity to what happened at the beginning of the 7th pandemic of cholera, when *V. cholerae* El Tor replaced classical *V. cholerae.* Whether *V. cholerae* 0139 will ultimately replace *V. cholerae* El Tor and cause wide spread epidemics or pandemics will be seen in the future. Therefore a close watch is needed to monitor the situation and take appropriate control measures.

ACKNOWLEDGEMENTS

The authors are grateful to Dr Joy G Wells, Centers for Disease Control, Atlanta, Georgia, USA for serotyping the strains.

REFERENCES

Albert MJ, Siddique AK, Islam MS, *et al.* Large outbreak of clinical cholera due to *Vibrio cholerae* non 01 in Bangladesh. *Lancet* 1993; 341 : 704.

Aldova E, Laznikova K, Stephankova E, Lietava J. Isolation of non agglutinable Vibrios from enteritis outbreak in Czechoslovakia. *J Infect Dis* 1968; 118 : 25 - 31.

Bhattacharya MK, Bhattacharya SK, Garg S, *et al.* Outbreak of *Vibrio cholerae* non 01 in India and Bangladesh. *Lancet* 1993; 342 : 1346 - 7.

Chatterjee BD, Gorbach SL, Neogy KN. Characterization of non - cholera vibrios isolated from patients with diarrhoea. *J Med Microbiol* 1970; 3 : 677 - 82.

De Paola A, Presnell MW, Motes ML, *et al.* Non-01 *Vibrio cholerae* in shell fish, sediment and waters of US gulf coast. *J Food Protection* 1983; 46 : 802 - 6.

Gaines S, Duangmani C, Noyes HE, Occeno T. Occurence of non agglutinating vibrios in diarrhoea patients in Bangkok, Thailand. *J Microbiol Soc Thai* 1964; 6 : 8 - 10.

Jesudason MV, Lalitha MK, Koshi G. Non 01 *Vibrio cholerae* in intestinal and extra intestinal infections in Vellore, India. *Ind J Pathol Microbiol* 1991; 34 : 26 - 9.

Ramamurthy T, Garg S, Sharma R, *et al.* Emergence of novel strain of *Vibrio cholerae* with epidemic potential in southern and eastern India. *Lancet* 1993; 341 : 704.

Rao RS, Vijayalakshmi N. A bacteriological study of gastroenteritis at Pondicherry. *Ind J Med Microbiol* 1985; 3 : 63 - 7.

Shimada T. Nair CB, Deb BC, *et al.* Large outbreak of clinical cholera due to *Vibrio cholerae* non 01 in Bangladesh. *Lancet* 1993; 341 : 1347.

West PA, Lee JV. Ecology of *Vibrio* species, including *Vibrio cholerae* in natural waters of Kent, England. *J Appl Bacteriol* 1982; 52 : 435 - 48.