

LETTER-TO-EDITOR

Faecal Leucocytes in Cholera due to *Vibrio cholerae* O139 Bengal

Sir,

Faecal leucocytes are either absent or very few in fresh cholera stool caused by infection with *Vibrio cholerae* O1 which does not invade intestinal mucosa but produces an enterotoxin which causes neither inflammation nor destruction of intestinal epithelium. Microscopic examination of faecal specimen usually reveals fewer than five polymorphonuclear cells per high-power field of light microscope. This, however, is not absolute as cholera may occasionally be superimposed on other acute or chronic inflammatory bowel disease (1-2). Particularly in tropical countries where mixed infections with invasive enteric pathogens are not uncommon, faecal leucocytes in considerable numbers have been observed in the stools of cholera patients. Copathogens are usually missed on routine microscopic examination and culture techniques. The novel strain of *V. cholerae* O139 Bengal, responsible for a recent outbreak of cholera in the Indian subcontinent, has similar clinical features as that of classical *V. cholerae* O1 (3).

In a study carried out at the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B.), the number of faecal leucocytes in diarrhoeal stools of 102 patients with *V. cholerae* O139 infection has been compared with those of 47 patients with *V. cholerae* O1 infection. It was found that significantly more patients with *V. cholerae* O139 infection had more leucocytes (Qadri *et al.*, personal communication). Hossain *et al.* reported the presence of increased numbers of faecal leucocytes in cholera stools of *V. cholerae* O139 infection in adults from the same Centre (4). An explanation for the increased faecal leucocytes in the diarrhoeal stools of *V. cholerae* O139 infection is not readily available. But certain characteristics of this new strain of vibrios should be considered in the context of these new findings. Though there are some similarities between *V. cholerae* O139 and *V. cholerae* O1 biotype El Tor in cultural characteristics, physiology, and molecular genetics, *V. cholerae* O139 differs from *V. cholerae* O1 by possession of polysaccharide capsule like other non O1 vibrios. This capsule has extra-virulence characteristics. But the strains of *V. cholerae* O139 are able to undergo phase variation, shifting between encapsulated and minimally encapsulated or unencapsulated forms (5-6). Therefore, it is conceivable that some fully capsulated strains might have invasive properties, a possibility suggested by two clinical

reports of bacteraemia (7-8), as well as initial experiments on animal models in which *V. cholerae* O139 caused bacteraemia in mice after intradermal inoculation (6). Inoculation of *V. cholerae* O139 into intestinal loops of rabbits resulted in inflammation of the mucosa and gut wall, and bacteraemia was observed. (Khan AM, ICDDR,B, unpublished observations). All the above observations support the probability of invasive properties of *V. cholerae* O139 Bengal.

Non-O1 vibrios are occasionally responsible for dysenteric illness probably because of possession of a capsule. Therefore, the capsule of vibrios is considered to indicate invasive properties, and the degree of invasiveness may depend on the extent of encapsulation of the vibrios (9). Many faecal leucocytes in stools noticed in cholera due to *V. cholerae* O139 infection present a dilemma in interpretation of exact pathological condition of gut and clinical situation. Endoscopy and biopsy, meticulous stool microscopy, and extensive microbiological studies in patients with cholera caused by *V. cholerae* O139 should disclose whether or not postulated invasive properties exist in some strains of this new serogroup of *V. cholerae* O139 Bengal.

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