LABORATORY INFECTION BY *VIBRIO PARAHAEMOLYTICUS*

S. C. SANYAL*, J. SIL AND R. SAKAZAKI†

Cholera Research Centre, 3 Kyd Street, Calcutta 16, India

VIBRIO PARAHAEMOLYTICUS was first reported as a cause of food poisoning in Japan (Sakazaki, 1965), and has since been encountered in cases of gastroenteritis in various parts of the world, including Thailand and the Philippines (Dr H. Inaba, personal communication), Australia (Battey *et al.*, 1970), Malaysia (Dr L. M. Prescott, personal communication) and Calcutta (Chatterjee *et al.*, 1970). In a recent study, large numbers of *V. parahaemolyticus* strains were obtained from patients with diarrhoea in Calcutta (Sakazaki *et al.*, 1971). In 1972, it was isolated in England from travellers who had eaten crab meat on a flight from Bangkok to London (Drs B. C. Hobbs and G. I. Barrow, personal communication). The present report is of a case in which we believe that infection was acquired in a laboratory.

Case report

The patient was one of us (J. S.), normally engaged on work in the cholera laboratory and thus well aware of the necessary precautions as regards personal hygiene. The day before the onset of illness was the first time that he had handled strains of *V. parahaemolyticus*, having been transferred on that day to a laboratory in which he subcultured a number of strains from stock.

On the following day at 9.30 a.m. he became very ill and complained of severe upper abdominal pain followed by bloodstained loose motions. This was associated with nausea and sweating. Ten loose motions were passed within 12 hr. The pulse rate was 90 to 100 per minute. The blood pressure and temperature were not recorded. The weakness and abdominal discomfort continued for 48 hr.

Because the maximum incubation period of *V. parahaemolyticus* infection is believed to be 18 hr, we traced back the history for this length of time. Lunch on the previous day was taken between 1 and 2 p.m. and consisted of bread, butter, eggs and sweets, which he shared with his colleagues, none of whom developed any symptoms. He then subcultured the *V. parahaemolyticus* strains and left for home at about 5 p.m. On the return journey he took no food or drink and his dinner at home consisted of well-cooked rice, eggs, pulse and vegetables, which he shared with his family at about 9 p.m. In the morning he had only a cup of tea at 8 a.m.

BACTERIOLOGICAL INVESTIGATIONS

The first faecal specimen for microscopical and bacteriological examination was a sample of the third motion and had been passed before tetracycline treatment was begun. The second sample was collected on the 3rd day when all the symptoms had subsided.

No ova, parasites or cysts were observed in either of the samples, but many red blood cells were present in the first sample.

Both stools were emulsified in Trypticase Soy Broth (Baltimore Biological Laboratories) and plated on thiosulphate citrate bile-salt sucrose agar (TCBS Agar; Nissui Seiyaku Co.), Vibrio Agar (Nissui), SS Agar (Nissui) and, after three-fold dilution, on plates of deoxycholate hydrogen-sulphide lactose agar (DHL Agar; Nissui). Secondary enrichments were done in Monsur's broth and in Selenite Cysteine Broth (Difco) by incubation overnight and in GN Broth (BBL) by incubation for 6 hr. Secondary platings were done on TCBS and Vibrio

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* Present address: Department of Microbiology, Institute of Medical Sciences, Banaras Hindu University, Varanasi-5, India.

† Present address: National Institute of Health, Tokyo, Japan.

Agar from Monsur's broth, on mannitol lysine crystal-violet brilliant-green agar (MLCB Agar; Nissui) and SS Agar from Selenite Cysteine Broth, and on SS Agar from GN Broth.

A pure culture of typical colonies of *V. parahaemolyticus*—large, sticky and sucrose non-fermenting—appeared on both the primary and secondary TCBS and Vibrio Agar plates seeded with the first but not the second sample of faeces. No other bacterial pathogen could be detected in either sample.

The vibrio strain was tested by the methods described by Sakazaki (1965). It gave positive reactions for oxidase, catalase and gelatinase, and fermented glucose in Hugh and Leifson's medium without the production of gas. It gave a positive test for lysine and ornithine decarboxylase but a negative test for arginine dihydrolase. The Voges-Proskauer reaction was negative. Indole was produced. The organism grew in media containing 8 per cent. sodium chloride. It fermented mannitol but not sucrose in the presence of 2 per cent. sodium chloride. The Kanagawa phenomenon was observed on Wagatsuma Agar (Nissui) with 5 per cent. human red blood cells.

DISCUSSION

It is generally believed that *V. parahaemolyticus* infection follows the ingestion of heavily contaminated food, the commonest item being raw sea-fish or crab. Our patient had had no such food for several days before the onset of symptoms. Thus he was unlikely to have ingested heavily infected food and the likely course of events was the transmission by means of a small number of organisms that escaped hand washing. Infection through drinking water could be excluded because the water supply was common to all the laboratories and no other person reported ill before, during or after this case.

The patient's residence was in an area where no *V. parahaemolyticus* infection was known to have occurred at the time, and the community through which he travelled to his work was also believed to be free from this infection. In fact, the nearest area where this organism was known to be present in Calcutta at the time was at least 10 miles from his place of work and 35 miles from his home. In his family, which consisted of his parents, two brothers, wife, two children and one servant, nobody had any similar complaint before, during or after the case. Water was supplied from a deep well.

Thus, although the evidence is necessarily only circumstantial, it would appear that this was a case of laboratory infection. If, as we believe, it was caused by a small inoculum, we may have to revise our ideas about infection by this organism.

SUMMARY

Vibrio parahaemolyticus infection is generally believed to follow ingestion of heavily contaminated food, the commonest source being raw sea-fish. In the present communication we report a laboratory-acquired infection with this organism in which clinical disease probably followed the ingestion of only a small number of organisms.

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