

VIBRIOS AMONG PATIENTS OF GOOD SOCIOECONOMIC CONDITIONS DURING THE CHOLERA EPIDEMIC IN RECIFE, BRAZIL

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SUMMARY

Between March and July, 1992, we screened for *Vibrio* all fecal samples submitted for bacteriologic diagnosis at a private clinical laboratory in Recife. Of 1435 cultures examined only 1 (0.07%) was positive for *V.cholerae* 01, biovar Eltor, serovar Inaba, but 17 (1.2%) yielded non-cholera *Vibrio* (*V.cholerae* non-01; *V.fluvialis*; *V.furnissii*, *V.parahaemolyticus* and *Vibrio* spp). Thus, *V.cholerae* 01, differently of other enteropathogenic vibrios, spared individuals of good socioeconomic conditions even during the cholera epidemic, which made hundreds of victims in the neighboring slums.

KEY WORDS: Cholera epidemic; *Vibrio cholerae*; Non-cholera *Vibrio*; Diarrhea.

The seventh cholera pandemic was introduced into Recife, a tropical city situated on the Atlantic coast of Brazil (Population, 1,300,000) on the beginnings of March, 1992, favored by the carnival, a popular annual party that gathered in Recife hundreds of persons, many coming from cholera-infected areas.

As is common to other Brazilian Northeast cities, the population of Recife displays a wide range of standard of living. Forty per cent of the individuals are distributed in approximately 500 slums, whose shanties have poor sanitation, lack adequate water supplies, and it is frequent the multiuse of water sources. In contrast, other inhabitants show better standard of life, that is, live in households with at least piped water and flush toilets. In addition, this higher socioeconomic group was aware of the risk factors for cholera previously to its transmission into Recife.

Now, we report that in Recife, *V.cholerae* 01, differently of other enteropathogenic vibrios, spared individuals of good socio-economic conditions even during the cholera epidemic, which made hundreds of victims in the neighboring slums.

Between March and July, 1992, we screened for *Vibrio* all fecal samples submitted for bacteriologic diagnosis at a private clinical laboratory in Recife. Stools were enriched in alkaline peptone water (pH 8.5) supplemented with 2% NaCl and subcultured to thiosulfate-citrate-bile salts-sucrose agar (Difco Laboratories, Detroit, Mich.). Colonies suspected of *Vibrio* were purified on sheep blood agar and biochemically characterized by using accepted criteria¹. Cultures of *V.cholerae* were tested for agglutination with 01 *V.cholerae* antisera (Denka, Seiken Co., Tokyo) and investigated for the ability to produce cholera toxin by using the Vet-RPLA latex agglutination test (Denka) as recommended by the manufacturers.

Of 1435 cultures examined only 1 (0.07%) was positive for *V. cholerae* 01, biovar Eltor, serovar Inaba. This strain was recovered from a patient who got her infection in Gravatá, a small town close to Recife. On the other hand, 7 (0.49%) of the specimens yielded *V.cholerae* non-01, 4 (0.28%) *V.fluvialis*, 3 (0.21%) *V. furnissii*, 1 (0.07%) *V.parahaemolyticus*, and 2 (0.14%) *Vibrio* spp. In contrast with the *V. cholerae* 01 isolate, no strain of non-cholera *Vibrio* was able to produce cholera-like toxins.

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Thus, during the present epidemic *V. cholerae* 01 practically was not found among diarrheal patients selected from middle-class families or from patients with a higher socio-economic background, but non-cholera vibrios were. This indicated that both groups of *Vibrio* had a different route of transmission; non-cholera vibrios sharing with members of the family *Enterobacteriaceae* and not with *V. cholerae* 01 its vehicle for human contamination. In reality, we isolated *V. cholerae* non-01 jointly with *Shigella flexneri* from two patients and with *Salmonella* sp. from another, suggesting that contaminated food instead of dirty water was the most probable source for infection in that group of individuals. Such findings support a previous assertion that non-01 serotypes are more capable than *V. cholerae* 01 for survival and multiplication in a wide range of food⁴. Epidemiologically, however, both serogroups 01 and non-01 divide at least seasonality. In fact, the frequency of *V. cholerae* non-01 was higher during the epidemic in comparison with that found in 1990 and 1991³ (Table 1). Moreover, in Lima, Peru, the decline of the cholera epidemic was coincident with the seasonal decay of the level of non-01 *V. cholerae* in sewage lagoons⁵.

TABLE 1

Isolation rates of *V. cholerae* non 0-1 and *V. parahaemolyticus* before and during the cholera epidemic

	No exam.	<i>V. cholerae</i> n-01	<i>V. parahaemolyticus</i>
Before	3036	5 (0.16%)	24 (0.79%)
During	1435	7 (0.49%)	1 (0.07%)

Alternatively, the larger number of *V. cholerae* non-01 strains recovered during the cholera epidemic would be attributed to the larger number of fecal samples submitted for bacteriologic study. Presumably, the knowledge of the outbreak stimulated people to submit for culturing many stool samples from mild case of diarrhea. In fact, before the cholera epidemics, most strains of *V. cholerae* non-01 were recovered from children presenting many fecal leukocytes², but during the outbreak six of the seven strains were isolated from adults with mild watery diarrhea. Additionally, in the three first weeks of the epidemic the number of stools referred to the laboratory increased almost three times; most senders being teenagers and adults, who infrequently submitted stools for culturing before the cholera epidemic. Perhaps, *V. cholerae* non-01 is a more constant cause of adult gastroenteritis in Recife than we previously thought.

Concerning the isolation of other non-cholera vibrios, we observed a sharp decrease in the number of *V. parahaemolyticus*, the most usual species of *Vibrio* found in Recife previous to the epidemic³. Certainly, the fear of cholera influenced people to avoid eating raw oyster, an important source of infection for *V. parahaemolyticus*-linked human enteritis.

RESUMO

Vibriões coléricos e não coléricos entre pacientes de boas condições sócio-econômicas durante a epidemia de cólera no Recife, Brasil

Entre março e julho de 1992, pesquisou-se *Vibrio* em todos os espécimes fecais enviados para diagnóstico bacteriológico a um laboratório clínico privado do Recife. De 1435 culturas examinadas apenas 1 (0.07%) foi positiva para *V. cholerae* 01, biovar Eltor, sorovar Inaba, porém 17 (1,2%) forneceram outras espécies de *Vibrio* (*V. cholerae* não-01; *V. fluvialis*; *V. furnissii*; *V. parahaemolyticus* e *Vibrio* spp). Portanto, *V. cholerae* 01, diferentemente de outros vibriões entero patogênicos, poupou indivíduos de boas condições sócio-econômicas, mesmo durante uma epidemia de cólera que atingiu centenas de pessoas nas favelas vizinhas.

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