INCIDENCE OF CHOLERA AROUND MONSOON

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ABSTRACT

OBJECTIVES

Cholera still remains a major problem in countries with poor economic and social conditions in which access to safe water and proper sewage system is not fully provided. Monsoon season also seems a favourable factor. The current study reports on isolation of Vibrio cholerae (V. cholerae) during the beginning of monsoon season.

MATERIALS AND METHODS

During a 2-month period 36 samples were received from clinically suspected cases of cholera. The samples were processed by Gram stain, culture on MacConkey agar, TCBS medium and 5% sheep blood agar. IMViC tests and serotyping using Ogawa and Inaba antisera.

RESULTS

Of the total samples 14 samples (38.88%) tested positive for isolates of V. cholerae. In them higher number of female patients and pediatric patients i.e. 71.42% of each respectively were noted.

CONCLUSION

Continuous monitoring and surveillance for possible outbreaks of cholera seems justifiable to control cholera epidemic.

KEYWORDS

Incidence, Vibrio cholerae (V. cholerae).

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INTRODUCTION

Vibrio cholerae (V. cholerae) is an autochthonous inhabitant of fresh and brackish water and estuarine system.[1] Cholera is a lethal diarrheal disease caused by V. cholerae. The division of V. cholerae into different serogroups is based on its major surface antigen which is called O antigen. More than 200 serogroups have been classified but only strains belonging to 01 and 0139 serogroups have been reported to cause epidemic and pandemic cholera.[2] The 01 serogroup is further classified into two biotypes namely classical and El Tor. Seven cholera epidemics have occured all over the world and its outbreaks still continue in Iran and other developing countries.[3,4,5]

Cholera symptoms are mainly produced by cholera toxin (CT), an enterotoxin which is coded by ctxAB operon that is part of a filamentous bacteriophage genome and composed of two subunits i.e. subunit A (CTA) and subunit B (CTB). V. cholerae O1 is distinguished by two of its major virulence factors, cholera toxin (CT) and the toxin-coregulated pilus (TCP). The cholera toxin is encoded by ctxA and ctxB, which are found on the CTXφ and is responsible for the manifestation of diarrheal disease with severe water and electrolyte loss.

The TCP, encoded by the tcp operon in the Vibrio pathogenicity island (VPI), is required for V. cholerae colonization of the small intestinal epithelium.

The first six pandemics possibly originated from the Gangetic Delta of Bengal, are believed to have been caused by the classical biotype. The ongoing seventh pandemic caused by El Tor biotype of 01 sero group started from Sulawesi island of Indonesia in 1961.

Cholera is an important public health problem in India. Constant monitoring of areas for possible sources of outbreaks and study of prevalent isolates is necessary. This study reports the characteristics of strains which we isolated during monsoon period.

MATERIALS AND METHODS

The study was conducted in the Dept. of Microbiology in a tertiary care institute from June 2011 to July 2011. Stool samples were collected from patients presenting with severe diarrhea and rice watery stools. Hanging drop preparation of these samples was done for observing motility. Alkaline peptone water was used for the preliminary enrichment of vibrios from the faeces. All the samples were plated onto MacConkey agar, 5% sheep blood agar and TCBS medium. They were subjected to Gram stain, oxidase and motility tests. Further biochemical tests done were IMViC tests, ornithine decarboxylase, lysine decarboxylase and arginine dihydrolase. Biotyping was done on the basis of these tests. Serotyping was done by slide agglutination using Ogawa and Inaba antisera.

RESULTS

Out of the 36 samples which we received for testing, 14 samples (38.88%) tested positive for V. cholerae (Table I). Out of the positive samples the number of female patients and pediatric patients were much more (71.42% each resp.) as compared to male patients and adult population. All the isolates belonged to V. cholerae biotype ElTor serotype Ogawa.
Conclusions
V. cholerae cannot be eradicated from its natural aqueous reservoirs. Hence uprooting of cholera is nearly impossible. Ability of V. cholerae to survive during inter-epidemic periods and have epidemic potential necessitates continued monitoring and surveillance of all cholera outbreaks.

References