Toxigenic Vibrio cholerae identified in estuaries of Tanzania using PCR techniques

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Abstract

The current study assessed the occurrence of the Vibrio cholerae serogroups O1 and O139 in environmental samples along salinity gradients in three selected estuaries of Tanzania both through culture independent methods and by cultured bacteria. Occurrence *of* V. cholerae was determined by PCR targeting the *V.* cholerae *o*uter membrane protein gene ompW. Furthermore, the presence of toxigenic strains and serogroups O1 and O139 was determined using multiplex PCR with specific primers targeting the cholera toxin gene subunit A, ctxA, and serotype specific primers, O1-rfb and O139-rfb, respectively. Results showed that *V.* cholerae occurred in approximately 10% (*n* = 185) of both the environmental samples and isolated bacteria. Eight of the bacteria isolates (*n* = 43) were confirmed as serogroup O1 while one belonged to serogroup O139, the first reported identification of this epidemic strain in East African coastal waters. All samples identified as serogroup O1 or O139 and a number of non-O1/O139 strains were *ctxA* positive. This study provides *in situ* evidence of the presence of pathogenic V. cholerae O1 and O139 and a number of V. cholerae non-O1/O139 that carry the cholera toxin gene in estuaries along the coast of Tanzania.