Seroprevalence of Dengue Fever in Chittagong, Bangladesh

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Abstract
Background: Dengue is a growing public health problem globally including Bangladesh. This study is carried out to find out the seroprevalence of dengue fever in Chittagong. Methods: About 1181 serum samples were tested from suspected dengue patients for IgM and IgG antibodies by immunochromatographic methods. Results: Among them, 533 (45.13%) were seropositive. Among the seropositive cases 213 (39.96%) were IgM positive, 227 (42.59%) were IgG positive and 93 (17.45%) were both IgM and IgG positive. Conclusions: A high percentage of dengue positive cases among suspected patients demands early careful investigation and management. Key words: Dengue; Fever; Dengue in Chittagong.

INTRODUCTION
During the 19th century, dengue was considered as a sporadic disease, causing epidemics at long intervals. However, dramatic changes in this pattern have occurred and currently dengue ranks as the most important mosquito-borne viral disease in the world. It may give rise to an undifferentiated fever, classical dengue fever, dengue hemorrhagic fever (DHF) or dengue shock syndrome (DSS).1

The global prevalence of dengue fever spectrum has grown dramatically in recent decades. Every year about 50–100 million cases of dengue infection and 500,000 cases of DHF occur worldwide.2 The case fatality rate is found to be around 5% for DHF and DSS.3 Although dengue has a global distribution, Southeast Asian region together with Western Pacific region bears nearly 75% of current global disease burden. The Southeast Asian region is currently experiencing an upsurge in reported cases of dengue in a number of countries including Bangladesh, India, Sri Lanka and Thailand.4

Dengue fever was reported in Bangladesh in 1964 when it was known as “Dacca fever”5 and since then it has remained endemic. The seroprevalence was found to be 13% in 1997.6 In 2000, the reported dengue cases were 5,551 with 93 deaths in different hospitals of Bangladesh. It was then declared as an outbreak of dengue at the national level.7

Dengue fever is an acute infectious disease caused by arbovirus in the flavivirus genus. Four viral serotypes exists (DEN-1, DEN-2, DEN-3 and DEN-4). Infection with one serotype confers long immunity against that particular serotype only with very little cross-immunity.8 In fact, infection with other serotypes may lead to DHF or DSS during the second attack. Residual antibodies produced during the first
Dengue is an important emerging disease of the tropical and sub-tropical regions, today. It is clear that since last decade, dengue has been occurring regularly with periodic surges in a number of cases. The differential diagnosis associated with dengue fever include a wide variety of viral which includes Chikungunya, bacterial, Rickettsial and parasitic infections that produce a similar syndrome. A definitive diagnosis is confirmed by virus isolation and/or serology.

The dengue antibody seroprevalence rate in this study was 45.13% which is similar to Gupta et al., in Delhi, India who found 44.56% serological confirmed cases in 2006. In a study by Ukay et al., in India, found 31.3% patients were serologically positive for dengue infection. In Chittagong Amin et al., found 34.3% seropositive dengue patients in 2000. Our results are slightly different from their findings because of epidemiological changes in dengue infection in different locations.

In this study, we found 39.96% anti-dengue IgM positive and 42.59% anti-dengue IgG positive cases. Hossain et al., in 2003 reported 34.5% primary dengue and 65.5% secondary dengue cases in Bangladesh which is nearly similar to our study.
63% anti-dengue IgM positive and 68% anti-dengue IgG positive cases in 2001 which is different from our studies. Nagi et al., in Pakistan showed 73% anti-dengue IgM positive patients in 2011 and Gupta et al., found 25.05% anti-dengue IgM positive cases in 2003, in Delhi, India. This difference of results may be partially attributed to the rapid unplanned urbanization with unchecked construction activities and poor sanitation facilities contributing to a fertile breeding ground for mosquitoes. It is also true that an increase in the alertness among medical fraternity following the initial epidemic and the availability of diagnostic tools have contributed to the increased detection of cases.

CONCLUSION

Dengue viral infection is prevalent in Chittagong, although the present report is limited in terms of scope and the population studied. The results are significant enough to call for more extensive serological surveys to assess the real extent of disease burden due to dengue virus infection. A high percentage of dengue positive cases among suspected patients demands early careful investigation and management.

REFERENCES