Dear Editor,

Epidemiology of dengue in Delhi is changing fast; all four dengue virus types have been isolated from previous outbreaks followed by complete predominance by dengue serotype 3 in the year 2005.[1] When multiple serotypes of a virus circulate simultaneously in a geographical region, patients with concurrent serotype infection are found. The first case of dual infection with two dengue serotypes (dengue 1 and 4) was reported in Puerto Rico in 1982.[2] Since then, more cases of concurrent infection by multiple dengue virus serotypes have been reported in different countries. Although in 2003 we reported co-circulation of all four dengue serotypes from India,[3] concurrent infection of an individual with more than one dengue serotype are rarely documented from India. We therefore report two cases of concurrent dengue infection with dengue -3 and dengue -1 virus by reverse transcriptase polymerase chain reaction (RT-PCR) from Delhi.

Two young adult males were admitted in the Emergency Department of our institute with history of high grade fever, thrombocytopenia, headache, retrobulbar pain and myalgia. Both the cases were clinically diagnosed as Dengue Hemorrhagic Fever (DHF) as per WHO criteria.[4] Serum samples were obtained two days after

Concurrent Infection by Two Dengue Virus Serotypes among Dengue Patients

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the onset of symptoms for dengue virus specific RT-PCR. Dengue viral RNA was isolated from the serum samples using the QIA amp viral RNA mini kit (Qiagen, Germany) as per manufacturers protocol. The RT-PCR assay employed in this study could distinguish the 4 dengue serotypes by the size of the products as described by Lanciotti et al\(^5\) and has shown to be highly specific for detection of all four dengue serotypes directly from clinical samples. Published primers by Lanciotti et al, were used in this study.\(^5\) The reported sensitivity of this assay is similar to that of the virus isolation and immunofluorescence assay system. Two rounds of PCR included, first step of RT-PCR using highly conserved primer pair, D1 (forward) and D2 (reverse) and a second-round PCR using the primer D1 and four serotype-specific primers, TS1, TS2, TS3 and TS4. The expected size of the RT-PCR products was 511 bp (D1 and D2) (external PCR product) and 482-bp (D1 and TS1 for dengue-1), 119-bp (D1 and TS2 for dengue-2), 290 bp (D1 and TS3 for dengue-3) and 392-bp (D1 and TS4 for dengue-4).

Both the patients were positive for dengue infection by dengue 1 as well as dengue 3 viruses (Fig.). Whether such concurrent infections are associated with more severe disease remains to be investigated. Both our cases were of DHF but were without any complications. Both patients recovered fully and were discharged. The present finding thus indicates that one of the features commonly seen in hyperendemic regions is also found in Delhi. Our findings suggests that dengue in Delhi has definitely become hyperendemic. Concurrent infection does occur in our geographical locale. Obviously future virological and molecular surveillance of outbreaks in Delhi should therefore be conducted from a new perspective.

References


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