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Editorial

Dengue: “plus ça change, plus c’est la même chose”

Dengue is an illness caused by a Group B arbovirus (flavivirus) transmitted by the mosquito *Aedes aegypti*. Four types of dengue viruses have been identified (DENV-1, 2, 3 and 4). The infection with a particular serotype results in long-lasting and type specific immunity.¹ Frequently, but not exclusively, the subsequent infection with a different serotype virus results in an exaggerated antibody response to the new virus, and manifests as a severe disease.² Hemagglutination-inhibition, complement fixing, and neutralizing antibodies may be detected in patient’s serum with titers peaking during convalescence.

Dengue is endemic in our country, with epidemics occurring during the rainy season that favors mosquito breeding. Warm humid conditions and densely populated regions contribute to the high degree of disease transmission. The recent estimates suggest that 96 million apparent dengue infections occurred globally in 2010 (three times more than dengue burden estimates by WHO). Asia bore 70% (67 (47–94) million infections) of this burden, and India contributed 34% (33 (24–44) million) of the total global infections.³ This increasing global burden of dengue has posed a difficult public health challenge to all governmental and public health agencies.

In this issue of Medical Journal of Armed Forces India, two papers on Dengue have been published. The paper by Sahni et al,⁴ evaluates reverse transcription loop mediated isothermal amplification (RT-LAMP) technique for detection and differentiation of dengue virus serotypes. Currently the diagnosis of dengue infection is achieved by NS1 antigen detection, nucleic acid amplification and virus detection. Nucleic acid amplification techniques such as reverse transcriptase polymerase chain reaction (RT-PCR), real time PCR and multiplex PCR involve complicated methods for amplification and detection. This study illustrates that the sensitivity, specificity, and effectiveness of RT-LAMP is comparable to RT-PCR. The cost per test is approximately Rs 475 to Rs 500 for either of these tests. However, the turnaround time for RT-LAMP (20–30 min) is considerably lesser than RT-PCR (4 h), which is of advantage.

The second paper by Rath et al,⁵ describes the autopsy findings in cases of fatal dengue hemorrhagic fever. Six fatalities among the dengue patients over a period of 16 months

are described. All patients who died had significant thrombocytopenia, pleural and peritoneal effusion, with cerebral edema. This re-emphasizes the inflammatory cascade with increased capillary leak syndrome in dengue shock syndrome.

The two papers describe the two ends of dengue as a disease. While the paper by Sahni et al,⁴ describes how we can make an early and more definite diagnosis of Dengue; the paper by Rath et al,⁵ chronicles the set of events or organ dysfunctions that led to the death of the patients. The treatment of dengue remains supportive, with the most crucial factor being a careful and judicious fluid balance. For patients with uncomplicated dengue infection, the management involves oral fluids and monitoring for capillary leak/bleeding diathesis. However, in a small proportion of patients, the disease makes a transition from “febrile phase” to “critical phase” around the time of defervescence (between 4 and 7 days of illness). During this transition to the “critical phase”, it is important for the clinician to monitor for the danger signs, which herald an impending deterioration. These danger signs include persistent vomiting, severe abdominal pain, rapid breathing, tender hepatomegaly, mucosal bleeding and wet purpura, serosal effusions, and lethargy/restlessness. In these patients, in addition to parenteral fluids, there may be a requirement of blood component support and adjuvant therapy (vasopressors and inotropes).

Hence, despite all the recent advances, the “curative” management of dengue remains elusive. There are no effective antiviral agents or any vaccine yet available. In addition, the most advanced dengue vaccine candidate also did not meet expectations in a recent large trial.^{6,7} Hence, the current efforts to reduce dengue, stay focused on curbing the transmission of virus by using combination of chemical and biological targeting of *Aedes* mosquito and managing the breeding sites.

To conclude, despite all the advances, the management of dengue involves application of best practices in triage, identifying the “danger signs” and instituting judicious fluid management. Till a breakthrough occurs in the field of antivirals and vaccines, dengue continues to be yet another example of age old epigram “plus ça change, plus c’est la même chose” (literally the more it changes, the more it’s the same thing).

REFERENCES

1. Simmons CP, Farrar JJ, Nguyen v V, et al. Dengue. *N Engl J Med*. 2012;366(15):1423–1432.
2. Halstead SB. Pathogenesis of dengue: challenges to molecular biology. *Science*. 1988;239(4839):476–481.
3. Bhatt S, Gething PW, Brady OJ, et al. The global distribution and burden of dengue. *Nature*. 2013;496(7446):504–507.
4. Sahni AK, Grover N, Sharma A, et al. Reverse transcription loop-mediated isothermal amplification (RT-LAMP) for diagnosis of dengue. *MJAFI*. 2013;69(3):246–253.
5. Rath KR, Arora MM, Sahai K, et al. Autopsy findings in fatal dengue haemorrhagic fever-06 cases. *MJAFI*. 2013;69(3):254–259.
6. Sabchareon A, Wallace D, Sirivichayakul C, et al. Protective efficacy of the recombinant, live-attenuated, CYD tetravalent dengue vaccine in Thai schoolchildren: a randomised, controlled phase 2b trial. *Lancet*. 2012;380(9853):1559–1567.
7. Halstead SB. Dengue vaccine development: a 75% solution? *Lancet*. 2012;380(9853):1535–1536.

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