

## Dengue Dengue

Muhammad Khurram

Department of Medicine, Holy Family Hospital and Rawalpindi Medical College

Dengue fever is caused by dengue virus which is RNA virus belonging to Flavi virus family. Dengue virus has four serotypes (DEN 1 to 4). It is a vector borne illness transmitted mainly by *Aedes* mosquito. Dengue is primarily seen in humans, although other primates can also be affected. Dengue fever (DF), dengue hemorrhagic fever (DHF), and dengue shock syndrome (DSS) are three spectrums of disease resulting from dengue virus infection. Plasma leak consequential to hyperimmune response differentiates DF from DHF. DSS is worst form of DHF that has additional features of circulatory failure.

DF is a self limiting illness requiring symptomatic treatment and hydration. DHF/DSS require management focused on the plasma leak duration which is termed as critical period. As no specific antiviral medicine is available; fluid regimen and monitoring of clinical and laboratory parameters are mainstay of DHF/DSS treatment. This includes cautious administration of crystalloid (normal saline or Ringer lactate), colloid (Dextran or hydroxyl ethyl starch solution), and blood transfusion in such a way that hemodynamics are maintained without producing fluid overload.

Presence of the vector (*Aedes* mosquitoes) at Lahore, Karachi, DI Khan and Larkana was noted in early second quarter of last century (1930s).<sup>2</sup> Dengue however is relatively a new issue in Pakistani scenario. Two theories exist as far as spread of dengue in Pakistan is concerned.<sup>1</sup> According to one; dengue infected persons who came from endemic countries transmitted the virus to local *Aedes* mosquito population. The diseases spread to areas as the cycle was repeated locally. According to other; possibly goods especially used tyre import resulted in transfer of various stages of infected *Aedes*. Vector and the disease than spread to other parts of the country by goods transportation, and movement of infected persons.

Interestingly it has been considered that dengue will not be a health care issue in Pakistan. Suspicion that dengue has come to Pakistan was first made when at Hubb (Baluchistan province) an epidemic of undifferentiated fever occurred in 1985.<sup>3</sup> First confirmed case of dengue was however documented

at Karachi (capital of Sind province) during the year 1994.<sup>4</sup> Since then dengue epidemics have been noted at many places in the country. The biggest of these was 2011 epidemic in which 21597 confirmed cases were documented and 257 deaths occurred.<sup>5</sup> Lahore the provincial capital of Punjab was hit mainly at this time.

Dengue is now endemic in Pakistan and we have to face this problem efficiently. Weather changes, rainy season, and deficient dengue related health education have been considered important contributors to occurrence of dengue epidemics in Pakistani scenario. Although, not all of these can be changed but focus on the modifiable may relieve the disease burden to minimum while avoiding dengue epidemic which are being repetitively seen.

It is important to know that dengue is preventable disease. This disease cannot be managed by relying on the curative side as focusing mainly on patient management lead to situation in which hospitals are full of dengue patients. Public sector hospitals are already overburdened and dengue epidemics cause diversion of hospital resources from patients with other diseases to dengue patients. This has its own impacts.

Focusing Rawalpindi, dengue infections are being reported here since 2006.<sup>4</sup> For last three years, at Rawalpindi we are facing dengue outbreaks consecutively. 1223, 1571, and 3917 patients with dengue infection were diagnosed in the years 2013, 2014, and 2015 respectively. This means 28.48% rise in dengue infections was noted in year 2014 compared to 2013, while 150% increase was noted in 2015 compared to 2014.<sup>6</sup>

Yearly dengue stats of Rawalpindi are alarming high compared to Lahore where after 2011 epidemic efficient control has been achieved. What lies behind this is not difficult to understand as issues which lead to spread of infectious diseases like congested localities, deficient civic facilities, unsatisfactory clean water supplies, and population shift are there in most of Pakistani cities.<sup>7</sup> It is continuous and persistent enforcement of preventive strategies that lead to control in Lahore and is required for Rawalpindi as well.

Are we going to get rid of dengue or we are going to live with it? One answer to these questions is prevention based on vector control. Multi dimensional approach is required for this purpose that entails health education, socioeconomic uplifting, community participation, control of breeding places, and capacity building etc. It has been noted in successive dengue Rawalpindi epidemics that localities with poor provision of water supplies were storing water which provided source for mosquito breeding. Dengue focused preventive strategies will also decrease burden of other infectious diseases like malaria, hepatitis A, E, and tuberculosis.

Vaccination is the other answer. Dengue vaccine development has faced difficulties because an effective vaccine should cover all dengue sero-types. If it confers immunity against one or two types, chances of DHF will increase when infection with other serotypes occur. Although work is going on various types of dengue vaccine, "Dengvaxia" vaccine produced by Sanofi Pasteur is getting approval in various countries recently. It is a chimeric (CYD-TDV) live attenuated vaccine produced by replacing component genes of yellow fever vaccine with that of dengue virus serotypes. 56.5-64.7% efficacy of this vaccine has been noted.<sup>8,9</sup> This vaccine lead to 80% reduction in getting chances of complicated versions of dengue infection (DHF and DSS).<sup>10</sup>

Let us hope for the better dengue free future with both preventive steps and vaccination.

## References

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