

EDITORIAL

Managing Dengue Syndrome in Children: Challenges for Paediatricians

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Dengue is a mosquito-borne viral infection which causes flu-like illness, and occasionally develops into a potentially lethal complication called severe dengue. The global incidence of dengue has grown dramatically in recent decades. About half of the world's population is now at risk. Dengue is found in tropical and sub-tropical climates worldwide, mostly in urban and semi-urban areas. Severe dengue is a leading cause of serious illness and death among children. There is no specific treatment for dengue/severe dengue, but early detection and access to proper medical care lowers fatality rates.

Dengue viruses cause symptomatic infections or asymptomatic seroconversion, thus better termed as "Dengue Syndrome". Symptomatic dengue infection is a systemic and dynamic disease. Paediatrician usually fail to diagnose dengue when a child presents with fever in the first few days, and thus follow-up is missed. A superficial history and physical examination will fail to diagnose early dengue patient thus diagnosis of upper respiratory tract infection or viral fever are usually presumed. These children are more ill and unable to attend school or work, but these questions are missed.

There may be an overload of hospital admissions out of fear and panic among the parents of febrile children which will overwhelm the hospital system with many uncomplicated dengue cases which could be treated as out-patient basis. Clear guidelines for admissions should be followed diligently which may ensure effective gate-keeping in a dengue outbreak. It should be kept in mind that only 2 to 3 percent of dengue patients, the disease could progress very rapidly during the critical phase resulting in shock and death. Admission into the hospital should be limited for those during the febrile period who are unable to manage adequate oral hydration at home

and those with co-morbid conditions with other risk factors.

It is a common practice to withhold investigations especially serial complete blood count during early febrile period, to detect the falling platelet count including changes in the level of hematocrit. Key message is a "complete blood count should be done at the first visit during dengue season with repetitions during next few days".

It has a wide clinical spectrum that includes both severe and non-severe clinical manifestations. Due to its dynamic nature, the severity of the disease will usually be apparent around defervescence which often coincides with the onset of the critical phase. For a disease that is complex in its manifestations, management is relatively simple, inexpensive and very effective in saving lives, so long as correct and timely interventions are instituted. Diverse clinical scenarios that arise during the different phases of the disease clearly assessed by the paediatricians leading to a rational approach in case management is key to a good clinical outcome.

The clinical management of dengue is more fraught than that of most other infectious tropical diseases. The uninitiated physician who has managed uncomplicated dengue cases may be lulled into believing that dengue is a "mild disease of thrombocytopenia" that requires no more than intravenous fluid therapy and platelet transfusions for a couple of days. When faced with severe dengue, these same physicians may be unprepared for the changing clinical, biochemical and hematological profiles that accelerate after the first few days of fever and therefore will not step up their vigilance during the critical period. The main hemodynamic elements of septic shock are maldistribution of blood volume resulting from an increased vascular capacitance and

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myocardial suppression, while dengue shock is hypovolemia with decreased vascular capacitance resulting from plasma leakage. Thus, the strategy of aggressive fluid resuscitation of septic shock is not applicable to severe dengue with plasma leakage. Volume replacement in children with dengue shock is a challenging management problem. Aggressive fluid resuscitation may indeed be harmful and should be limited to dengue shock with hypotension. There is a “narrow therapeutic index”; therefore, fluids have to be given timely, at the appropriate volume, rate, of the appropriate type (crystalloids, colloid and/or blood) and for the appropriate duration. Therein lies the challenge to physicians who are not familiar with the important practice of fluid titration through frequent and meticulous assessment. Progression of the disease through the critical phase should be tracked in hours of plasma leakage. Recognizing the cues to discontinue intravenous fluid therapy is just as important as knowing when to start it. Given time and hemodynamic stability, other issues such as thrombocytopenia, coagulopathy and raised liver enzymes will recover spontaneously or with supportive care.

The updated national guideline should be used by the paediatricians, to assess, identify, classify and manage patients. Advice regarding the warning signs and the urgency of seeking immediate medical attention should be clearly conveyed to the patients who are treated as out-patient basis. Furthermore, “stable vital signs” meaning normal blood pressure, urine output should be explained. Shock in the initial stage is difficult to assess unless the criteria is well understood by the treating paediatricians by detecting the cold extremities, feeble peripheral pulses and prolonged capillary refill time which are the earliest changes in shock. In compensated shock, the patient remains in quiet alert state until cerebral perfusion diminishes, and then if not appropriately resuscitated, develops “sudden” shortness of breath and restlessness or seizures followed quickly by a “sudden” collapse due to cardiac arrest and other complications.

Triage and management decision are crucial in determining the clinical outcome. Timely appropriate front-line management response not only reduces the number of undue hospital admissions but also saves the lives.