Clinical Profile, Intensive Care Unit Course, and Outcome of Patients Admitted in Intensive Care Unit with Dengue

Sidharth Sraban Routray[1,*], Deba Prasad Mohanty[2], Debasis Mishra[3]

[1]Assistant Professor, [2]Associate Professor, [3]Senior Resident, Department of Anaesthesiology and Critical Care, SCB Medical College & Hospital, Cuttack, Odisha, India.

*Corresponding Author:
E-mail: drkitusraban@gmail.com

Abstract

Aim: The purpose of the study was to assess the clinical profile and course of dengue patients admitted to the intensive care unit (ICU) and to find out factors responsible poor prognosis.

Methods: 100 Patients with dengue admitted to CICU were included in this study. Severity of illness was assessed by the acute physiology and chronic health evaluation (APACHE) II score, and organ failure was assessed by the sequential organ failure assessment score.

Results: 100 patients were assessed in this study. The commonest complaints were fever and rash. Mean admission APACHE II and Sequential Organ Failure Assessment scores were 8.45±5.5 and 3.92±4.2, respectively. The commonest organ failure was coagulation failure and respiratory failure.

Conclusions: Patients with dengue fever usually require ICU admission for organ failure. APACHE II score may predict poor outcome.

Key words: Dengue, Clinical profile, Outcome

Access this article online	
Quick Response Code:	**Website:** www.innovativepublication.com
	DOI: 10.5958/2394-4994.2016.00006.8

Introduction

Dengue is a major health issue in tropical and subtropical countries like India, and there have been annual dengue outbreaks in India especially in the postmonsoon season.[1] Dengue fever may present with a wide spectrum of nonspecific clinical symptoms and may have unpredictable clinical course and outcome. It may present as dengue fever, dengue heamorrhagic fever, or dengue shock syndrome[2]. Most patients recover after a self-limiting mild disease but a small proportion progress to severe dengue infection. Without appropriate therapy, dengue haemorrhagic fever may have a high mortality.[3] However, there were few studies regarding the epidemiology, clinical course, and outcome of patients with dengue fever admitted to intensive care units. So, we have studied the clinical profile and ICU course of dengue patients admitted to ICU and identified the factors related to poor prognosis.

Methods

A prospective observational study was conducted in the central ICU of SCB Medical College, Cuttack, Odisha, India. Severity of illness was assessed by the Acute Physiology and Chronic Health Evaluation (APACHE) II score[4], and presence of organ failure was assessed by sequential organ failure assessment (SOFA) score[5]. Patients were followed up to 28 days after discharge from CICU. Outcome measured was 28-day mortality. Nonsurvivors were defined as those who died during their ICU stay or within 28 days or ICU discharge. All patients were managed as per the WHO guidelines[3]. Blood transfusion and platelet transfusions were given only in cases with suspected or severe bleeding. Platelets transfusion was given only when the platelet counts were less than 20 000/mm^3 or in patients with platelet count greater than 20 000/mm^3 with active bleeding or undergoing any invasive procedure.[6]

Statistical analysis

We used SPSS version 16.0 for the statistical analysis. The means of continuous variables were compared using student t test, and the categorical variables were compared using x^2 test or fisher exact test.

Result

The commonest presenting symptoms were fever and rash, which were present in 90 (90%) and 70 (70%) patients, respectively. The most common cause of ICU admission was severe thrombocytopenia (<20 000/mm3) with or without bleeding manifestations like petechiae, subconjunctival haemorrhages, hematuria, or melena. Other reasons for ICU admission were systemic inflammatory response syndrome or severe sepsis, respiratory distress, jaundice, altered sensorium, shock, severe abdominal pain, severe dehydration, reduced urine output and persistent vomiting.

Table 1: Comparison between the baseline characteristics of survivors and nonsurvivors

Parameter	Overall (n=100)	Survivors (n=90)	Nonsurvivors (n=10)	P valus
Age(yrs)	40.50±19.8	37.85±18.5	47.37±17.6	.298
APACHE II score	8.45±5.5	5.15±7.8	25.45±8.5	.001
SOFA score	3.92±4.2	4.55±5.2	14.24±1.3	.001

Mean admission APACHE II and SOFA scores were 8.45±5.5 and 3.92±4.2, respectively. The commonest organ failure was coagulation (48%) followed by respiratory (19%) and cardiovascular failure (8%). Vasopressor support was required by 24% and renal replacement and mechanical ventilation were required by 8% and 15% of patients, respectively. The mean ICU length of stay was 7.8± 3.2 days. ICU and 28-day mortality was 10%.

Discussion

Patients with dengue fever may present with any organ failure, and require ICU admission. The outcome of these patients is good if appropriate therapy and organ support are instituted. We observed a 28-day mortality of 10% in our study, and admission APACHE II score was found to be an independent factor predicting mortality.

Dengue generally affects the younger population, and other Indian studies have also reported a higher incidence in males[7]. It predominantly affects the population living in urban and semiurban regions. Fever, myalgia, and an increased tendency to bleed, which may manifest as hematuria, rashes, or bleeding from injection sites, are the commonly reported clinical features of dengue[8]. Patients with dengue infection may present in the critical phase of their disease exhibited by severe plasma leakage causing dengue shock and /or pulmonary edema with respiratory distress, severe haemorrhages, or severe organ impairment. Organ impairment may manifest as hepatic or renal impairment, respiratory failure. Cardiomyopathy, eneephalopathy, or encephalitis. Such patients require intensive monitoring and aggressive care in an ICU setup. The outcome of such patients largely depends upon early recognition and aggressive management of shock and organ failure.

No specific therapy is available, so treatment is generally supportive. Patients may require oxygen support, intensive monitoring, antipyretics or analgesics, transfusion of platelet concentrate or blood, adequate hydration, and correction of electrolyte and metabolic abnormalities. The mortality of accordance with the previous Indian studies that have reported mortality in the range of 7.9% to 11.1%[9]. Study by Almas and colleagues[10] included 699 dengue patients and found that bleeding was independent predictors of mortality. Patients with severe dengue infection may have coagulation abnormalities, polyserositis leading to pleural effusion and ascites, and shock. These, in turn, may result in hypoxia and acidosis, which may further lead to cell death and multiorgan failure. Hence, death in severe dengue infection is generally secondary to refractory shock or multiorgan failure[11]. Therefore, severity of illness as assessed by apache II score may determine which patients may have unfavourable outcome. Coagulation abnormalities, which may be very common in patients with dengue fever and may also necessitate ICU admission in many patients, may not be a good indicator of overall outcome, as these are generally mild and reversible with blood and blood product transfusions. Massive bleeds leading to further complications and poor outcome can generally be avoided with close monitoring and platelet transfusions.

Conclusions

Patients with dengue fever may require ICU admission for organ failure. Their outcome is good if appropriate aggressive care and organ support are instituted early. Severity of illness on ICU admission as assessed by APACHE II score may predict patients at higher risk of death.

Conflict of Interest: None
Source of Support: Nil

References:

1. WHO. Dengue and dengue haemorrhagic fever. Fact sheet no 117, revised May 2088. Geneva: World Health Organization; 2008. http://www.who.int/mediacentre/factsheets/fs117/en/.
2. WHO. Dengue haemorrhagic fever: diagnosis, treatment, prevention and control. 2nd ed. Geneva: World Health Organization; 1997.
3. WHO. Dengue: guidelines for diagnosis, treatment, prevention and control, new ed. Geneva: World Health Organization; 2009.
4. Knaus WA, Draper EA, Wagner DP, et al. APaCHE II: a severity of disease classification system. Crit Care med 1985;13:18-29.
5. Vincent JL, Moreno R, Takala J, et al. The SOFA (Sepsis-related Organ Failure Assessment) score to describe organ dysfunction / failure. Intensive Care Med 1996;22:707-10.
6. Makroo RN, Raina V, Kumar P, Kanth RK. Role of platelet transfusion in the management of dengue patients in a tertiary care hospital. Asian J transfuse Sci 2007:1:4-7.
7. Chandralekha, Gupta P, Trikha A. the north Indian dengue outbreak 2006: a retrospective analysis of intensive care unit admissions in a tertiary care hospital. Trans R Soc Trop Med Hyg 2008;102:143-7.
8. Khan NA, Azhar Ei, El-Fiky S. Et al. Clinical profile and outcome of hospitalized patients during first outbreak of

dengue in Makkah, Saudi Arabia. Acta Trop 2008;105:39-44.

9. Shah I, Deshpande GC, Tardeja PN. Outbreak of dengue in Mumbai and predictive markers for dengue shock syndrome. J Trop pediatr 2004;50:301-5.

10. Aimas A. Parkash O, Akhter J. Clinical factors associated with speciality in dengue infection at a tertiary care center. Southeast Asian J trop Med Public Health 2010;41:333-40.

11. Ranjit S. Kissoon N. Jayakumar I. Aggressive management of dengue shock syndrome may decrease mortality rate: a suggested protocol pediatr Crit Care Med 2005;6:412-9.