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Infection

Intracranial hemorrhage in dengue fever: management and outcome A series of 5 cases and review of literature

Rajinder Kumar, MBBS MS Mch*, Om Prakash, MBBS MS Mch, B.S. Sharma, MBBS MS Mch

Department of Neurosurgery, All India Institute of Medical Sciences New Delhi, 110029 India

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Abstract

Background: Dengue is one of the most important mosquito-transmitted arboviral diseases of tropical and subtropical parts of the world. It is estimated that 100 million cases occur per year, and 2.5 billion people at risk. Hemorrhagic complications causing encephalopathy is a rare but fatal. We discuss the management of 5 uncommon cases of intracranial hemorrhage in dengue. High index of suspicion is required for early diagnosis.

Methods: Five of these patients with intracranial bleed were managed in neurosurgery unit. All the patients had deranged prothrombin time and thrombocytopenia. They were given platelet concentrates for correction of thrombocytopenia. All parameters and neurologic status were closely followed. Four of these patients had deterioration in neurologic status; 2 of them underwent surgery.

Results: Two patients who underwent surgery had excellent outcome. One patient was managed conservatively with cerebral decongestants. Two patients with deep-seated bleed had very rapid deterioration and died.

Conclusion: High index of suspicion in dengue is required especially during convalescence in those patients who are disoriented and have altered sensorium. It should not be misinterpreted as fever delirium or toxic encephalopathy. It needs immediate attention and investigation. Timely diagnosis and intervention can thus save many precious lives.

Keywords: Dengue fever; Encephalopathy; Dengue hemorrhagic fever; Dengue hemorrhagic shock syndrome

1. Introduction

Dengue is a mosquito-borne infection transmitted to humans by *Aedes aegypti* (rarely *A albopictus*) and caused by one of the 4 closely related virus serotypes of the genus *Flavivirus*, family Flaviviridae. The global prevalence of dengue has grown dramatically in recent decades. This is endemic in different parts of the world. Dengue fever and DHF are acute febrile diseases, found in the tropics, with a geographic distribution similar to malaria [27]. Encephalopathy is a rare but fatal complication of dengue virus infection. The treatment of DHF with CNS involvement is supportive and symptomatic and rarely needs surgical intervention [5,20,30,31]. We report this uncommon complication of dengue in a series of 5 patients admitted in a single hospital and discuss their management and outcome.

2. Case reports

We present a series of 5 cases of dengue hemorrhagic fever with intracranial bleed in a recent outbreak of dengue in Delhi from a single hospital (Table 1) (Figs. 1-5).

Abbreviations: DHF, dengue hemorrhagic fever; DHSS, dengue hemorrhagic shock syndrome; CNS, central nervous system; WHO, world health organization; PT, prothrombin time; ALT, alanine transferase; NCCT, noncontrast computed tomography.

* Corresponding author. Tel.: +91 09891353682; fax: +91 11 26588663.
E-mail addresses: rklaythalling@rediffmail.com (R. Kumar), drsharmabs@yahoo.com (B.S. Sharma).

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Table 1

Case No	Age/sex	Presentation	Platelet count/ mL/PT	Dengue serology/type	CT scan finding	Neurologic deterioration on	Management	Outcome
1	22/male	Fever, headache, myalgia	39 000 PT prolonged	Positive/type 2	Left basal ganglia hematoma (Fig. 1)	5th day	Conservative	Died
2	15/male	Fever, headache, hemiparesis	19 000 PT prolonged	Positive/type 2	Right basal ganglia hematoma (Fig. 2)	5th day	Conservative	Improved
3	9/male	Fever, headache, vomiting, Unconscious $E_1V_TM_2$	26 000 PT prolonged	Positive/type 2	Left frontotemporal acute subdural hematoma (Fig. 3)	7th day	Operated (craniotomy and evacuation of hematoma)	Improved
4	40/male	Fever, headache, vomiting, Unconscious E_2 V_4M_6	70 000 PT prolonged	Positive/type 2	Right frontoparietal acute subdural hematoma (Fig. 4)	5th day	Operated (craniotomy and hematoma evacuation and decompressive craniotomy)	Improved
5	45/female	Fever, headache, vomiting, unconscious	15 000 PT prolonged	Positive/type 2	Left basal ganglia hematoma (Fig. 5)	15th day	Conservative	Died

We made a few interesting observations in our series. All these patients were perfectly healthy without any predisposing factor for intracranial bleed before this episode of illness. All of them had typical clinical presentations, prolonged PT, and severe thrombocytopenia. All were confirmed by serology. All of these patients were young adults, and most of them had intracranial bleed around convalescence (1 week after the onset of fever). All patients had moderate to severe headache before neurologic deterioration. It was interesting to note that none of these patients had bleeding from other sites except intracranial bleed. All the patients were given platelet concentrate transfusions to keep platelet count above 100 000/mL. Two of these patients underwent surgery after the correction of PT and platelet counts. Both of these patients made good recovery. Three of them had deep-seated parenchymal hematoma, 1 had large temporal subdural hematoma, and 1 had multiple frontotemporal subdural hematoma. Urgent and timely operative intervention in

Fig. 1. (NCCT, head) Left basal ganglia bleed with intraventricular extension.

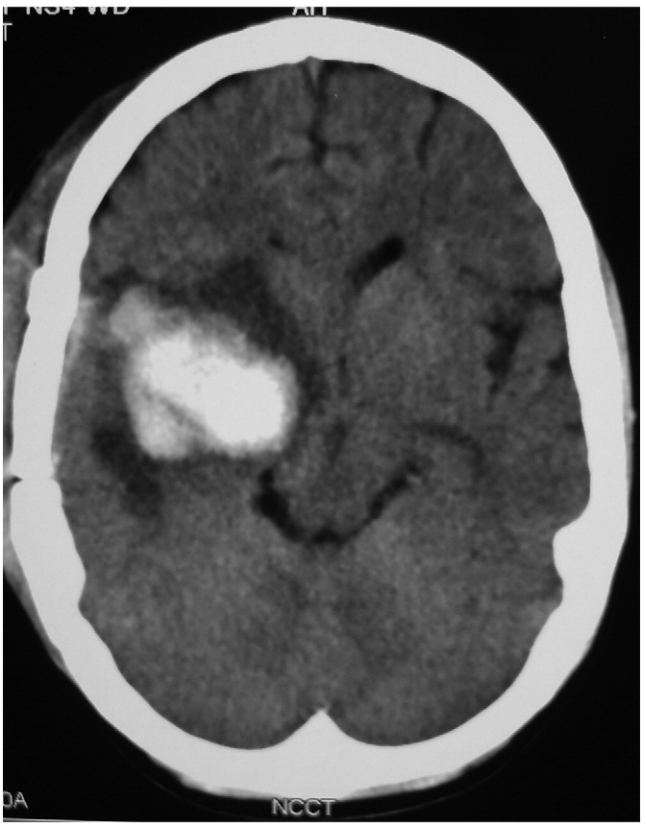

Fig. 2. (NCCT, head) Right basal ganglia hematoma.