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Hemorrhagic Stroke in Dengue; A Rare Sole Presentation

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Abstract:

Dengue fever is a major public health problem in tropical countries. Clinical manifestations range from a nonspecific viral syndrome to a severe fatal hemorrhagic disease. Hemorrhagic stroke as the sole presentation in dengue is very rare. We report one adult male who presented with high fever, generalized bodyache with alter sensorim and left sided hemiplegia. Dengue was suspected because of thrombocytopenia and epidemic of dengue in West Bengal. In dengue epidemic area, dengue should be considered as probable eitiological causes of hemorrhagic CVA. We have confirmed these case by NS1Ag, Dengue IgM antibody, IgG antibody and Low platelate count in his blood.

Keywords: ***dengue vasculopathy; thrombocytopenia; Hemorrhagic CVA.***

Introduction:

Dengue is a mosquito borne human disease. Worldwide infected about 3.2 million/year.(1) Half of the world population is now at risk. (2) Dengue fever is a major public health problem in tropical countries. Clinical manifestations range from a nonspecific viral syndrome to a severe fatal hemorrhagic disease. Central nervous system complications associated with dengue are relatively uncommon, with a reported frequency of around 1%. (3). Intracerebral hemorrhage associated with dengue fever is a rare condition, with less than 15 cases documented in the English literature. (3) Dengue is a well-known tropical viral infection that can result in bleeding abnormality due to severe thrombocytopenia. However, a rare presentation; "the hemorrhagic CVA in dengue" is very rare. We describe one cases of hemorrhagic CVA caused by dengue infection that occurred in this rainy season (2016) in the city of Kolkata, West Bengal, India. During dengue outbreak in West Bengal, a huge number of case were admitted in this tertiary care centre "***Infectious Disease & Beliaghata General Hospital,Kolkata -10 ;West Bengal,India*** " with varying clinical presentations, ranging from asymptomatic infection to dengue shock syndrome. Neurological complications, in general, are unusual; however, sporadic cases have been reported, world over. We report here a case of a patient of dengue who developed left-sided hemiparesis, secondary to intracerebral bleed as a result of dengue with thrombocytopenia. The neurological complication in dengue infection has been hypothesized through three pathogenic mechanisms: (a) concerned with neurotropism leading to encephalitis, meningitis, myositis and myelitis, (b) systemic complications resulting in encephalopathy, stroke and hypokalemic paralysis and (c) postinfectious immune-mediated acute disseminated encephalomyelitis, Guillain Barre syndrome and optic neuritis.(4)

On reviewing available literature, dengue related intracerebral hemorrhage with ventricular extention has not been reported. The neurovirulent properties of dengue are not well known. CNS involvement with dengue has been reported in the form of seizures, meningitis, encephalitis, etc. This documentation is presented because of a rare manifestation of a common disease, and it also highlights an important, potentially fatal complication of this disease.

Case report

A previously healthy 21-year-old male was diagnosed as dengue by local physician at his private clinic. He was presented with complain of fever, headache, genneralised bodyache. Due to epidemic of dengue that physician sent NS1Ag and platelate count. NS1Ag was positive (by ELLISA method) and platelate count was 2.3lack and patient was advised to do daily platelate count. And serial of platelate count were 1.76lack - 1.46lack - 1.0lack. On 6th day of fever this patient admitted in our Institute with complain of high grade fever with alter sensorium and left sided weakness. Initial assement was GCS 11/15, Anisocoria, Severe neck rigidiry, temperature -104 degree farenhight, pulse 64/min, BP-180/110mmHg, respiration - 28/min, left sided planter extensor. After admission, CT scan of brain was done and found –hematoma at right caudate nucleus and adjacent internal capsule and with intraventricular extension. Hematological investigation shows –Hb 15gm/dl., PCV 39%, Wbc 5300/dl, platelate 38,000/dl. ***Dengue was confirmed by IgM and IgG andibodies in his blood.Others reports eg. MP, Dual***

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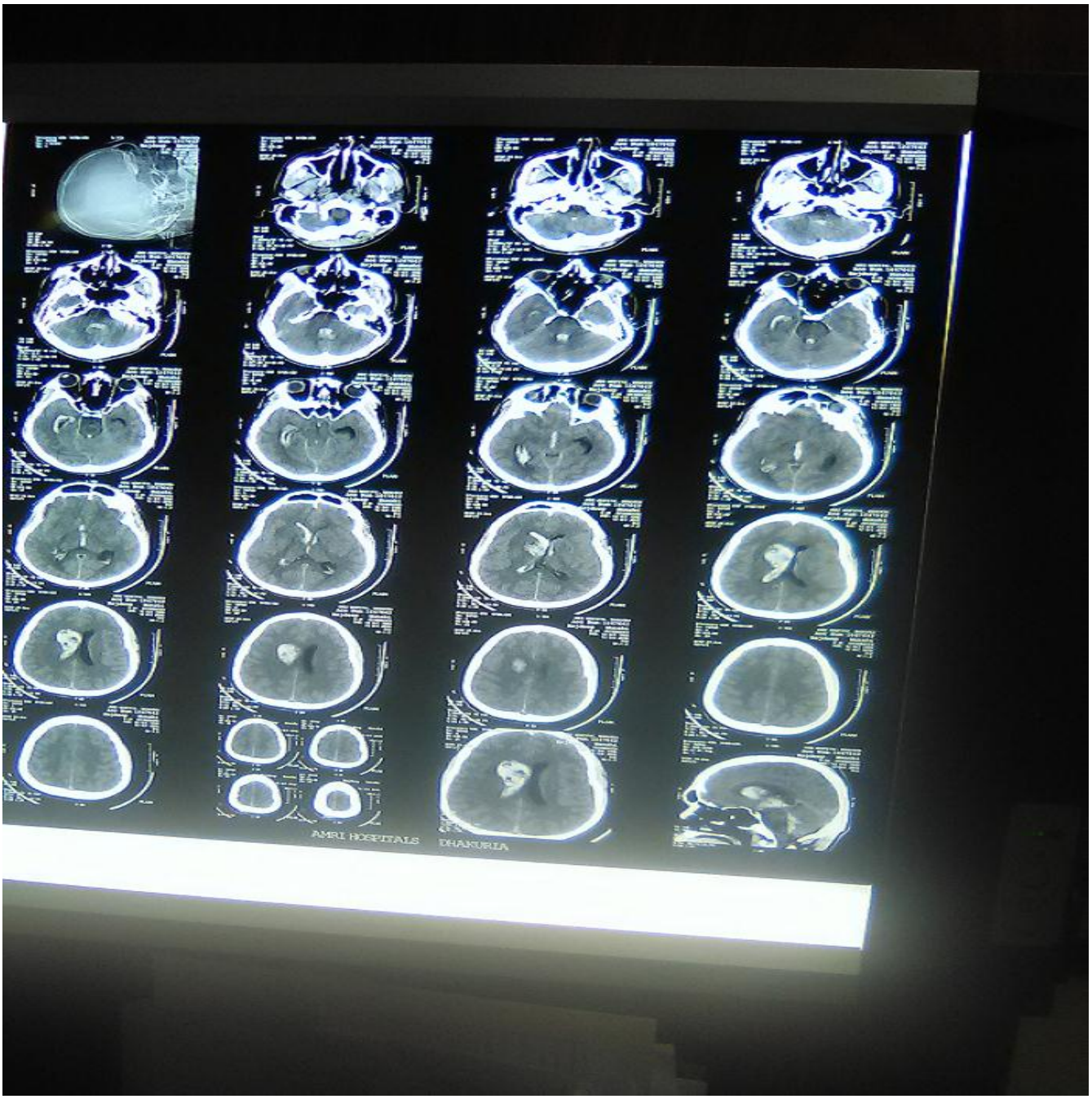
antigen, Typhi dot M all were negative.Metabolic panel,renal parameter , LFT, PT& APTT all were normal. Lumbar puncture showed an elevated opening pressure; clear appearance; 60 cells, all being RBC. Protein was 68mg/dL; and sugar, 80mg/dL. MR angio of brain was not suggestive of aneurysim or any A-V malformation.

We have treated him with IV lasix,IV mannitol,IV NS,IV PPI,IV Paracetamol. 3 unit platelate was transfused before lumber puncture. His platelate was increasing from 7th of fever. Gradually patient was improving and discharge him on 14th day with stable condition and advised to regular physiotherapy.



Discussion:

Central nervous system complications of dengue are diverse and include acute encephalitis, acute disseminated encephalomyelitis, transverse myelitis, meningitis, cranial neuropathy, Guillain-Barre syndrome, myositis, and hemorrhagic stroke.(5) Here, we report the case of a patient with dengue fever and cerebral hemorrhage. A literature review was also performed to illustrate the scarcity of cases of hemorrhagic stroke in association with dengue fever. Cam et al reported 5,400 patients with dengue fever, 27 of whom (0.5%) presented with central nervous system involvement, but only one with an intracebral hemorrhage.(6) A possible cause of the hemorrhage in our patient could be inflammatory vasculopathy. Endothelial dysfunction is a part of the alteration of hemostasis mechanism that has been implicated in the pathogenesis of dengue fever, even in the absence of altered coagulation or

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platelet count. Recent studies focused on dengue virus infection of primary endothelial cells have demonstrated that endothelial cells are efficiently infected, rapidly produce viral progeny, and elicit immune enhancing cytokine responses that may contribute to pathogenesis.(7)

Our case was reported during this rainy season; during the outbreak of dengue in West Bengal in2016.(8) In this cases there was no history petechiae, purpura,hematuria,GI bleeding, Epistaxis or gum bleeding which are the common form of bleeding manifestation of dengue hemorrhagic fever and associated with low platelate count. But in these cases the platelate count was 38,000/dl. At that level of platelate count bleeding manifestation usually not seen. Other complication of dengue eg. Capillary leak syndrome is seen when platelate count are fall around 50,000 to 40,000/cmm.(9) Platelate count is an invaluable diagnostic screening tool in dengue.(10) **Regular monitoring of " Platelate count" may be a biomarker of dengue fever. In this case patient required platelate transfusion before lumber puncture. On 6day of fever there was massive platelate destruction (62%). So, rate of platelate destruction is associated with complication and clinically significant. Usually, 38,000/cmm platelate count does not bleed from any site but in this case cerebral hemorrhage is documented. Platelate count reduction is not only causes of bleeding manifestation in dengue but other causes of bleeding may be consideded eg vasculopathy. In this case, we did not considered other causes of fever associated with thrombocytopenia like chikunguniya, mumps, Zika virus. Peripheral blood smear rule out the lymphoma and leukemia. Both p. vivax and p. falciparum may causes of thrombocytopenia and it is rule out by peripheral smear and dual antigen test.** Platelet destruction usually started from the 4th or 5th day of dengue fever & upto 14th day. A large Brazilians study included 543 dengue patients show thrombocytopenia started from 3rd day of fever in uncomplicate cases, while thrombocytopenia started from 1st or 2nd day in severe dengue. (11) In both groups the lowest platelet count occurred around the seventh day of fever. It is generally recommended to use PCR or NS1 antigen detection in patients with fever for fewer than five days, and MAC ELISA in patients with fever for more than five days. (12) Dussart *et al*. have achieved a sensitivity of 89% with an assay for NS1 antigen (13). This test is rapid, reliable and less costly than PCR. When used in combination with IgM, the detection rate rose to 92.3% (14). A rising titre in two serum samples can confirm acute infection. *Singh et al*. reported the sensitivity of MAC-ELISA at 69%, rising to 90% with repeat convalescent testing. Specificity was 80%. (15) Although this issue may be subject to reporting bias, to the best of our knowledge, this case represents the sixteenth reported in the medical literature. When other major causes have been ruled out and before classifying the intracranial hemorrhage as idiopathic, dengue virus infection should be considered in the differential diagnosis in endemic areas or during outbreaks.

Conclusion:

Our report demonstrate that hemorrhagic CVA with fever can be dengue infection. Regular monitoring of "Platelate count" is the biomarker of dengue infection. In dengue epidemic area, dengue infection should be considered as probable etiology of hemorrhagic CVA. Fever with low platelate count may be dengue infection unless proved otherwise in tropic. Rate of platelate destruction is also significant**.** A possible cause of the hemorrhage in our patient could be inflammatory endothelial dysfunction.

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Consent: Informed consent is taken from each patient.

Conflict of Interest: No conflict of interest is decleared.

References:

[1] WHO, May 2015; Dengue and Severe Dengue
[2] WHO, Reference April 2016, Fact update sheet; Dengue and **severe dengue**
[3] Cerebellar Hemorrhage in a Patient during the Convalescent Phase of Dengue Fever-J Stroke. 2014 Sep; 16(3): 202–204. Published online 2014 Sep 30. doi: 10.5853/jos.2014.16.3.202PMCID: PMC4200593
[4] Neurological complications of dengue fever: Experience from a tertiary....*https://www.ncbi.nlm.nih.gov› NCBI › Literature › PubMed Central (PMC)*-by R Verma - 2011.
[5] **Neurological complications of dengue infection-** *Neurology India, Vol. 58, No. 4, July-August, 2010, pp. 581-584.*
[6] Cam BV, Fonsmark L, Hue NB, Phuong NT, Poulsen A, Heegaard ED. Prospective case-control study of encephalopathy in children with dengue hemorrhagic fever. Am J Trop Med Hyg. 200; 65:848–851. [PubMed].
[7] Roles for Endothelial Cells in Dengue Virus InfectionNadine A. Dalrymple and Erich R. Mackow- Advances in Virology, Volume 2012 (2012), Article ID 840654, 8 pages;http://dx.doi.org/10.1155/2012/840654

**Corresponding Author - Dr. Tapan Biswas, M.D*

[8] Anandobazar Patrika; A daily News.Date 15/8/2016

[9] **Capillary leak syndrome is inversely related to platelet count in dengue./Dr. Tapan Biswas; Department of Internal Medicine, Malda Medical College, Malda,West Bengal,India.***Published in International journal Meddical science and Clinical Research;// vol//04//Isseu//09//page 12315-12320// septmber 2016*

[10] Goswami et all-Rare presentation of dengue meningitis J Infect Dev Ctries 2012;6(2):208-211.

[11] Araújo FM, Brilhante RS, Cavalcanti LP, Rocha MF, Cordeiro RA, Perdigão AC, Miralles IS, Araújo LC, Araújo RM, Lima EG, Sidrim JJ (2011) Detection of the dengue non-structural 1 antigen in cerebral spinal fluid samples using a commercially available enzyme-linked immunosorbent assay. J Virol Methods 177: 128-131.

[12] Oliveira EC, Pontes ER, Cunha RV, Fróes IB, Nascimento D (2009) Hematological abnormalities in patients with dengue. Rev Soc Bras Med Trop 42: 682-685.

[13] Varatharaj A (2010) Encephalitis in the clinical spectrum of dengue infection. Neurol India 58: 585-591.

[14] Dussart P, Labeau B, Lagathu G, Louis P, Nunes MR, Rodrigues SG, Storck-Herrmann C, Cesaire R, Morvan J, Flamand M, Baril L (2006). Evaluation of an enzyme immunoassay for detection of dengue virus NS1 antigen in human serum. Clin Vacc Immunol 13: 1185-1189.

[15] Alexander N, Balmaseda A, Coelho IC, Dimaano E, Hien TT, Hung NT, Jänisch T, Kroeger A, Lum LC, Martinez E, Siqueira JB, Thuy TT, Villalobos I, Villegas E, Wills B; on behalf of the European Union, World Health Organization (WHO-TDR) supported DENCO Study Group (2011) Multicentre prospective study on dengue classification in four South-east Asian and three Latin American countries. Trop Med Int Health. May 30. doi: 10.1111/j.1365-3156.2011.02793.x. [Epub ahead of print].

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