CASE REPORT

A Case Report: Intracranial Haemorrhage in a Patient with Probable Dengue Fever

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Summary

We present a rare case of a patient diagnosed with probable dengue fever sustaining an intracranial haemorrhage after a trivial motor vehicle accident. From the literature reviewed, it was noted that there have been no reports of dengue fever presenting with an intracranial haemorrhage, and the association is more common in patients diagnosed with dengue hemorrhagic fever and/or dengue shock syndrome.

Key Words: Intracranial haemorrhage, Dengue fever, Dengue haemorrhagic fever, Dengue shock syndrome, Motor vehicle accident.

Introduction

Dengue fever/dengue hemorrhagic fever (DF/DHF) has been a public health problem in Malaysia. ICU admission of patient suffering from dengue is mainly confined to the more severe dengue hemorrhagic fever and dengue shock syndrome (DSS) and almost never for the mild form of DHF or DF. We report a rare case of intracranial haemorrhage after a trivial and mild motor vehicle accident in a young man suffering from probable dengue fever.

Case Report

A 19-year-old college boy with no previous medical history was involved in a minor low velocity, front to back two-car motor vehicle accident in which he was the back passenger. He sustained a knock to the forehead against the front seat with no visible injury apart from a slight reddening. The other two passengers did not have any injuries at all. There were no other injuries or loss of consciousness. He did not seek any medical treatment. Six hours post accident, he was noted to be confused with disorientation to time, place and people. He was brought to the casualty department, with a Glasgow Coma Scale of nine. His pupils were unequal in size, the left larger than the right, both sluggishly reacting to light. All reflexes were intact, with good motor tone. He was able to protect his airway, and had good gag reflex and adequate respiratory function. He was slightly pale but haemodynamics were stable, blood pressure 130/80mmHg, heart rate 120 beats per minute, and good peripheral perfusion. There were no other injuries detected. An urgent CT scan of the brain showed a left frontal extra-dural and sub-dural haematoma with no mid-line shift or evidence of cerebral oedema and raised intracranial pressure. An emergency craniotomy was performed and intraoperative, the surgeon noted an "oozing serous form" of haematoma, which was considered unusual. There were no obvious bleeders. Pre-operative blood investigations taken in the casualty department (1 hour prior to the craniotomy) reviewed in the operating theatre showed a platelet count of 160,000/mm^3 (normal 150 - 400 thousand/ul), haemoglobin of 9gm/dl (normal 12 - 18g/dl), total white cell count was normal ana haematocrit of 30% (normal 37 - 52%). Intraoperative haematocrit was 28%. A total of 1000mls Ringers solution was

transfused intraoperative. The estimated blood loss was 700ml. He was transferred to ICU intubated and ventilated for further observation and management. Due to the abnormal intraoperative findings, a prothrombin time (PT) and activated partial thromboplastin time (APTT) was done which showed patients PT=14.2 seconds versus control PT=10.4 seconds (normal PT=11.0 - 13.0 seconds) with a PT ratio of 1.36 (ratio <1.5 is considered safe for surgery, 2 - 2.5 adequate for DVT prophylaxis, 2 - 3 adequate for DVT treatment), and patient APTT=47 seconds versus control APTT=35.6 seconds (normal APTT=25 - 45 seconds) with an APTT ratio of 1.32 (ratio <1.5 considered safe for surgery, 2 - 2.5 considered adequate for DVT and pulmonary embolism treatment). Bleeding time (BT) and clotting times (CT) were normal. Further history from friends, revealed that the patient has been having a fever for the past 3 days associated with constitutional symptoms of backache, general lethargy, arthralgia, myalgia, nausea and vomiting. There was no history of rashes, nor any bleeding tendencies and the patient had no previous history of any haematological disorders. It was further noted that there had been reports of people suffering dengue fever near and around the college area.

A tentative diagnosis of dengue fever was made for this patient based on the clinical history of fever and the constitutional symptoms he had. This was supported with positive dengue serology (IgM), using the ELISA method. A DIVC screen and liver function test was done to rule out other possible causes of coagulopathy. The DIVC screen results were patient PT=15 seconds versus control PT=10.7 seconds with a PT ratio of 1.40, and a patient APTT=47 versus control APTT=34 seconds and an APTT ratio of 1.38 and normal FDP and serum fibrinogen levels. The liver enzymes test results were normal - alkaline phosphatase 76U/L (normal range 32-104U/L), and alanine transferase 14 U/L (normal <44U/L). The mild coagulopathy that the patient had was thought to be due to a combination of the dengue infection and consumption coagulopathy. The patient was transfused four units of fresh frozen plasma, and three units of pack cells, but no platelets concentrate were given. There were no further major bleeding episodes. A repeat platelet count was 168,000/mm^3, PT and APTT improved to near normal. Patients PT=13.6 seconds versus control PT=10.7 seconds (normal PT=11.0 - 13.0 seconds) and PT ratio 1.26 and patient APTT=45.9 seconds versus control APTT=35.3 seconds (normal APTT=25 - 45 seconds) and APTT ratio 1.30. The haemoglobin was 11gm/dl. He was kept sedated for mechanical ventilation throughout the night. No rashes or petechiae were noted, and Hess Test negative but he did have a low to moderate grade fever (average temperature 38°C). The following morning, after stopping sedation, he was more alert, and was starting to obey commands. Pupils were equal and reactive, with no neurological deficit, clinically stable, and on minimal ventilatory support. He was extubated with no further incidence. He was transferred to the general ward later in the afternoon. The final diagnosis was intracranial haemorrhage secondary to mild trauma in a patient with probable dengue fever. He was kept in the hospital for another 4 days during which his fever subsided, PT (12 seconds versus control 10.7 seconds and APTT=40 seconds versus 38 seconds) back to normal and repeat IgM still positive for dengue virus. He was discharged home and asked to come back again in two weeks time. The local health authorities were informed regarding the diagnosis.

Discussion

Dengue fever/dengue hemorrhagic fever (DF/DHF) is endemic in Malaysian mainly seen in the urban population and the severe form of dengue shock syndrome (DSS) seen mainly in children. It is the commonest and most important arthropod-borne viral infection in man.

It is estimated that there are 50 - 100 million cases of dengue fever (DF), and 250,000 - 500,000 cases of dengue haemorrhagic fever (DHF) in the world, with a case fatality rate in patients with DSS as high as 44%. DHF and DSS are now a leading cause of hospital admission and death among children in Asia[1].

It is usually seen during the hot season when mosquitoes (Aedes aegypti) are numerous especially found in the tropics and subtropics areas of the world (South East Asia, India, Pakistan, Sri Lanka, Africa and the Americas).

The differentiation between dengue fever and dengue haemorrhagic fever can at time be difficult in borderline

cases such as the one presented here, as well as varying in severity. In this case, the patient's only complaints were fever, general lethargy, arthralgia, myalgia, nausea and vomiting. His platelet count was normal, there was no haemoconcentration and the coagulopathy was mild. There were no overt signs of bleeding tendencies. He did not have any other common symptoms associated with DF such as headache, retro-orbital pain, rash and haemorrhagic manifestations~petechiae skin rash, epistaxis and gum bleeding. Overt bleeding e.g. bloodstain gastric aspirates, and severe haematemesis are commonly seen in the severe or very severe cases[1].

The patient suffering from DHF tends to have minor or major bleeding, thrombocytopaenia, and/or platelet dysfunction. The hallmark is usually evidence of plasma leakage documented by haemoconcentration (haematocrit increased by at least one-fifth or decreased by the same amount after intravenous fluid therapy), pleural or other effusions, or hypoalbuminemia or hypoproteinaemia which this patient did not have apart from the low haematocrit which was thought to be due to the intracranial haemorrhage rather than haemodilution.

In this particular case, base on the presentation, a bleeding disorder was not suspected to have contributed to the pathology. Initially, before further history was available, it was assumed the accident to be more serious than what it was made out to be, and this patient was unfortunate enough to have sustained an intracranial bleed.

Nimmannitya S et al[2] in a retrospective study looking at unusual presentation of DHF, found eighteen cases of DHF presented with jaundice and neurological signs, six cases of gross haemorrhage in the brain (all these patients died) and three cases of cerebral oedema. All these cases had moderate to severe derangement of their coagulation system with clinical evidence of a bleeding diathesis. None were associated with DF.

There were also no other case reports on dengue fever or mild DHF presenting with intracranial haemorrhage. The unavailability of sophisticated radiological imaging procedure in many developing countries could explain the paucity of such observations.

The laboratory diagnosis of dengue infection is based on virological and serological studies. The former attempting virus isolation, utilises an established culture line of Ae albopictus cells which are incubated followed by cell staining with fluorescein-conjugated polyclonal antibodies to detect virus isolates, which are then serotyped with monoclonal antibodies in an indirect fluorescent antibody test[1].

Serological diagnosis depends on the presence of IgM antibody or a rise in IgG antibody titre in paired acute and convalescent phase sera. IgM antibody becomes detectable during the acute phase of illness and 90% of patients are IgM positive by the sixth day after onset of symptoms. The IgM may be detected for a median of about 60 days. The IgM ELISA is 90% sensitive but IgM antibody may be due to infection up to 3 months earlier. The IgG antibody is usually measured by the haemagglutination inhibition test or ELISA, which begins to appear by the fifth day after onset of symptoms in primary dengue. A positive single serum sample has no clinical significance and a convalescent serum sample is required to have any significant clinical meaning, as people living in the tropics generally have a high rate of being IgG positive[1].

It was very unfortunate that IgG antibodies for dengue was not performed on this patient to further increase the clinical value of making a diagnosis of dengue fever.

According to the World Health Organisation (WHO) laboratory criteria for confirmation of dengue fever[3], a demonstration of a fourfold or greater change in reciprocal IgG or IgM antibody titres to one or more dengue virus antigens in paired samples is required for the diagnosis of dengue fever.

This patient did not have any classical features of DHF, and base on the case definition for dengue fever (WHO 1997)[3], can only be diagnosed as having a 'probable' diagnosis of dengue fever (presented with an acute febrile illness with myalgia and arthralgia with supportive serology of a positive IgM antibody test on both acute and convalescent-phase serum specimen) with mild coagulopathy. This case can also be group under the heading of 'dengue fever with unusual haemorrhage' according to the WHO classification.

We believe this case to be a rare case of a traumatic intracranial haemorrhage in a patient suffering from probable dengue fever. It demonstrates that patients with dengue fever may have a bleeding tendency that is subclinical. We hope this case will alert all medical practitioners to be aware of the possibility of an intracranial haemorrhage in someone suffering from dengue fever sustaining a mild head injury that presents with intracranial neurological signs.

References

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