

Outpatient management of dengue infection in the University Hospital, Kuala Lumpur

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INTRODUCTION

Dengue fever is endemic in Malaysia with frequent epidemics especially in urban areas. This infection can present in a wide range of severity, from a nonspecific febrile illness to life threatening dengue haemorrhagic fever and dengue shock syndrome. It is worth noting that dengue haemorrhagic fever comprised 11.2% of all reported cases in Malaysia in 1991.¹

Patients tend to consult their primary care physicians early. It is the duty of the primary care physicians to make an accurate diagnosis and to detect the complications. However, there has not been any known reliable predictor for the occurrence of complications during the early stage of the illness. Hence, primary care physicians often face the problem of having to deal with this uncertainty. Referring all these patients to the hospitals for admission is obviously not practical but managing them at home may involve high risks.

In order to assist primary care physicians, the Primary Care Unit in the University Hospital uses a set of guidelines for the outpatient management of the infection. These guidelines and their assessment will be discussed.

ROLE OF THE PRIMARY CARE PHYSICIAN

The primary care physician's role in this infection includes:

- a) early and accurate diagnosis
- b) early detection of complications
- c) as gatekeeper for the hospital
- d) effective management of uncomplicated cases.

Diagnosis and detection of complications

The early symptoms of dengue infection are non-specific. They include fever, retro-orbital headache, myalgia and bone pain.² Some patients claim that the severity of bone pain is more

than that experienced during previous episodes of viral illnesses. A third of the patients have a cough and sore throat and a similar proportion have epigastric discomfort or vomiting.³ These features may mislead the physicians into making a diagnosis of upper respiratory tract infection or food poisoning.

Clinical examination should include an assessment of the hydration status and vital signs. The tourniquet test is essential. Hepatomegaly is said to be present in dengue haemorrhagic fever but is nonspecific.

Complications tend to occur on the fourth to the seventh day of illness though it is not uncommon to encounter them earlier or even after one week of illness. These complications include thrombocytopenia, bleeding, haemoconcentration and shock.

Cutaneous petechiae is the most common manifestation of a bleeding tendency. More sinister bleeding includes epistaxis, gum bleeding, bleeding from the gastrointestinal tract, per vaginal bleeding and haemoptysis. Signs of impending shock include poor periphery circulation, reduced pulse volume, poor capillary return and, later, hypotension.

The degree of dehydration and the ability to retain oral fluids should be assessed. The patient's social and family support, and his ease in obtaining emergency medical care are important factors to be considered in the management.

Increasing numbers of cases of unusual presentations of dengue infection have been reported over the last ten years.^{4,5} These include acute fulminant hepatic failure, acute renal failure and encephalitis. However, these cases would clearly be admitted to hospital and outpatient management in these cases is irrelevant.

Protocol in outpatient management

Table 1 shows the protocol used in the University Hospital Outpatient Unit for patients aged twelve years old and above. It is important to note that certain non-medical factors, e.g. the patient's social condition and his accessibility to

TABLE 1: Protocol for outpatient management of dengue illness

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- A. Patients suspected to have dengue should have the following checked:
1. day of onset of illness
 2. temperature
 3. blood pressure
 4. pulse
 5. evidence of bleeding
 6. haematocrit
 7. white cell count
 8. platelet count
 9. dengue confirmation tests
- B. Patients with the following features should be referred for admission to a hospital:
1. evidence of bleeding other than cutaneous petechiae
 2. blood pressure < 90/60 mmHg
 3. platelet count < 50,000/mm³
 4. haematocrit >50%
- C. Patients not admitted should be monitored DAILY in the clinic with platelet count and haematocrit until they recover.
- D. Symptomatic treatment should be given to out-patients.
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care are not included in the protocol but these should be individually assessed by the attending physician.

All patients diagnosed to have dengue infection based on the clinical features discussed above are managed according to the protocol. Only simple laboratory investigations are performed in the outpatient setting for the initial assessment. The haemoglobin level and a packed cell volume (PCV) would assess the degree of haemoconcentration. However, the patient's normal PCV is usually not known to the physician. This limits its usefulness as an initial assessment tool. A low white cell count would be useful to support a diagnosis of viral infection. The platelet count has been proven to be a consistent indicator of the severity of the illness.⁶ Hence, it is important to obtain an accurate platelet count for every patient. However, it should be noted that thrombocytopenia is not the only factor causing bleeding. Increased capillary fragility and derangement of clotting factors are contributory but their assessment in the outpatient setting is not logistically practical.

The gatekeepers' role and outpatient treatment

Patients usually seek advice from their primary care physicians early in the course of the illness. Once the diagnosis of dengue infection is suspected, close monitoring of their clinical condition is necessary. However, it is not practical to

monitor all these patients in the hospital, especially in the urban area where shortage of hospital beds is a chronic problem. In addition, this may be counter-productive as some patients may have to be discharged from hospital too early, and complications of the infection may develop after they are discharged.

Primary care physicians have the responsibility of monitoring the patient's condition closely and selecting those deserving to be admitted to hospital. In the University Hospital, all these patients are reviewed daily in the outpatient clinic by repeated clinical assessment and simple laboratory tests. Those with hypotension, raised haematocrit, thrombocytopenia of less than 50,000/mm³ and evidence of internal bleeding are referred for admission (Table 1).

Patients treated at home are advised to increase their oral fluid intake and to watch for symptoms indicating the development of complications such as severe giddiness, syncopal attack and bleeding. They are advised to come to the hospital if any of these symptoms occur. Symptomatic treatment such as antipyretics, analgesic and antiemetics are given to the patients.

Assessment of the protocol

During a two-month period (May to June 1991), a study was carried out in the outpatient clinic of the University Hospital to assess the practicality of the outpatient management protocol.⁷ The

management of all patients clinically diagnosed to have dengue infection was reviewed by the study group to assess:

1. the patients' final outcome
2. the rate of admission
3. the doctors' compliance to the protocol
4. the patients' default rate.

During this period, 162 patients were clinically diagnosed to have dengue infection. 82.7% were categorised as dengue fever, 13.0% dengue haemorrhagic fever and 4.3% dengue haemorrhagic fever with shock.

There were no fatalities among these patients. The admission rate was 43.8%. Severe thrombocytopenia (<50,000/mm³) was the main reason for admission (58.6%), followed by raised haematocrit (19.2%), hypotension (7.1%), bleeding (7.1%) and others (8.1%). Since thrombocytopenia was common in these patients, determining its threshold level for hospital admission would have a profound effect on the rate of admission. In the study, 72.8% of the patients would have to be admitted if all patients with thrombocytopenia of less than 100,000/mm³ were to be admitted.

In 86.4% of cases, the management protocol was followed by the doctors. Instances where the protocol was not followed included:

1. failure to ask the patients to come for daily follow-up.
2. presence of other diseases e.g. diabetes and chronic rheumatic heart disease.
3. patients appearing ill despite absence of hypotension or severe thrombocytopenia.

The patients' default rate was 16.4%. This was low compared to the average default rate of the clinic of 33.8%. This might be due to widespread public awareness regarding the potential complications of dengue infections.

The low admission rate and high compliance by both the doctors and the patients showed that this protocol is practical for the University Hospital. However, it should be cautioned that the disease severity undergoes changes and continued close surveillance on the usage and safety of the protocol is necessary.

CONCLUSION

Most patients with dengue illness can be managed in the outpatient setting. Close monitoring

by repeated clinical and simple laboratory assessment is required to detect the development of complications. Use of the management protocol for patients older than twelve years old proved to be practical in the Outpatient Clinic of the University Hospital Kuala Lumpur.

REFERENCES

1. Vector-Borne Disease Control Program. The Ministry of Health, Malaysia, 1991.
2. Nimmannitya S. Dengue haemorrhagic fever. Oxford Textbook of Medicine. 2nd ed. pp. 124-5.
3. George R, Gan SC, Tuen KS. Changing pattern in the clinical presentation of dengue haemorrhagic fever in Malaysia during the period 1962 to 1982. *J Mal Soc Hlth* 1984; 4:57-64.
4. Nimmannitya S, Thisyakom U, Hemsrichart V. Dengue haemorrhagic fever with unusual manifestation. *Southeast Asian J Trop Med Pub Hlth* 1987; 18:398-406.
5. George R, Liam CK, Chua CT, *et al.* Unusual clinical manifestation of dengue virus infection. *Southeast Asian J Trop Med Pub Hlth* 1988; 19:585-90.
6. Mittrakul C. **Bleeding** problem in dengue haemorrhagic fever: Platelet and coagulation changes. *Southeast Asian J Trop Med Pub Hlth* 1987; 18:407-12.
7. Chin CK, Kang BH, Liew BK, *et al.* Protocol for outpatient management of dengue illness in young adult. *J Trop Med Hyg* (In press).