CASE REPORT

Septic Shock as a Differential Diagnosis of Severe Dengue Fever in a Child in Malaysia - a Case Report

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ABSTRACT

Dengue fever infection is common in many parts of the world and may result in serious complications such as dengue haemorrhagic fever, dengue shock syndrome, pleural effusion, pericardial effusion and multi-organ failure if not diagnosed early or treated adequately. This is more so in the so called susceptible group that includes children, pregnant mother, elderly patients, patients with heart, liver or kidney co-morbidity, obese patients as well as immunocompromised patient such as those with transplanted organs or human immune-deficiency infection. However in certain cases, severe dengue fever may mimic the presentation of septic shock which needs urgent and decisive management actions to be taken. This case report will look at a 7-year-old child who survived despite developing septic shock which was thought to be initially dengue fever with warning signs. Early referral and aggressive treatment in hospital prevented a direr consequence for this child.

Keywords: Septic shock, Dengue fever, Hospital, Mortality, Child

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INTRODUCTION

Dengue fever remains a common tropical illness (1). It may result in many serious complications such as dengue shock syndrome, metabolic acidosis, unremitting haemorrhage and multi-organ failure, which may be fatal if not detected early and subsequently treated aggressively.

Therefore, it is important to make an accurate early diagnosis, ideally through clinical features and vital signs and supported by laboratory parameters such as platelet count, white blood cells count, haematocrit and haemoglobin. However, it is important to remember other differential diagnosis such as sepsis which may lead to septic shock which carries a mortality rate of about 1 in 3 (31%) (2).

This case reports about a 7-years-old boy who developed the septic shock, but survived due to early diagnosis, coupled with aggressive fluid and antimicrobial therapy, and early referral to hospital.

CASE REPORT

A 7-years-old boy presented to a health clinic complaining of 4 days history of persistent fever with concomitant runny nose, sore throat and non-productive cough. These symptoms were complicated by vomiting, loose stool, reduced appetite and oral intake, generalized abdominal pain, body ache and lethargy along with reduced activity and urine output. There was no sick contact at home but there is history of a classmate being down with a fever. There was no history of jungle trekking, water activities or stall food intake recently. There was also no fogging done around the residential area. Otherwise, patient had no bleeding manifestation, rashes, diarrheoa, night sweat, shortness of breath or night sweats. Physical examination revealed mildle dehyrated looking child, febrile at 37.5C with tachycardia of 110 beats per minute and a coated tongue. Routine haematological investigation revealed high haematocrit at 40% and platelet and white blood cell count at normal range. He was managed with symptomatic treatment of anti-pyretics and anti-emetics and encouraged to increase his hydration level. He was managed as upper respiratory tract infection at that moment.

He came back next day with no improvement in his appetite or oral intake. Physical examination revealed intact alertness and consciousness despite looking fatigued. Vital signs showed that patient was still febrile with a 37.70C and tachycardic at 148 beats per minute with regular rhythm and normal volume. He was normotensive at 121/81 mmHg and had a

normal respiratory rate of 18 breaths per minute. Patient appeared warm to touch with capillary refill time less than 2 seconds and no conjunctiva pallor, scleral jaundice or injected conjunctiva. Oral examination revealed once again a coated tongue with mildly injected throat. Systemic examination revealed a generalised tender abdomen with no palpable mass, negative fluid thrill and normal respiratory findings. Routine haematological investigations were ordered which revealed increasing haemotocrit from 40% (day 4 of illness) to 41.8% (day 5 of illness). Platelet was still in normal range but presented a dropping trend from 236 to 184 x 109/ml while the white blood cell count remained normal at 7,000 x 109/L.

This patient was given a provisional diagnosis of dengue fever prior to confirmation attained via the rapid combo test. This diagnosis was made based on the marked increase of haematocrit despite platelet being at normal range and the presenting clinical features of fever, vomiting and body ache, among others. With the hike of pulse rate at almost two-times fold the normal range seen in the paediatric age group, patient was immediately referred to the nearest tertiary hospital for further intervention. Rapid combo test done prior to referral revealed negative results for dengue antigen. However in hospital, patient was re-diagnosed as septic shock due to deteriorating clinical condition despite adequate fluid replacement. He was treated aggressively with fluids and antibiotics. He was discharged after 1 week of hospital stay and was thereafter well. Luckily, he was referred early as any delay in referral would have had a severe consequence on his chance of survival.

DISCUSSION

Septic shock despite being uncommon, is an important condition to diagnosed early due to its inherent high mortality risk. This becomes important as delay in diagnosis and of starting appropriate antibiotics are recognised as the primary determinants of mortality (2). Sepsis as well known is a syndrome of biochemical, physiologic and pathological abnormalities that are induced by infection (3). Septic shock is a subset of sepsis with an even higher mortality rate of more than 40%. It is defined as a vasopressor requirement just to maintain a mean arterial pressure of 65mmHg and a serum lactate level greater than 2mmol/L in the obvious absent of hypovolaemia (4).

Poor outcome predictors of sepsis will include two or more of the following criteria: respiratory rate greater than 22 breaths/min, systolic blood pressure 100mmHg or less and altered mental status (4). Early targeted therapy with appropriate antimicrobials that is facilitated by timely diagnosis will certainly be the main tools in management. There will also be a need to be prudent in antibiotics selection in order to prevent the new worldwide menace which is antibiotic resistance (5). Notwithstanding this case, dengue fever and haemorrhagic fever remains the fastest spreading mosquito-borne viral disease with increase in worldwide incidence of 30-fold over the past 50 years. The marked rise in incidence is due to environmental and climate change, population growth, urbanization, travel and globalization. Despite the rapid global spread, nearly 75% of the disease burden remains concentrated within the highly endemic Asia Pacific region including Malaysia.

The health authorities have implemented many measures to reduce these outbreaks of dengue infection. This can be divided to measures involving the health community and those involving the public. Health personal related measures include mandatory notification of confirmed and suspected cases of dengue infection and frequent revision of evidence based clinical practice guidelines, the latest published in 2015. Among measures that can be done in the community including health education on potential breeding sites of dengue especially in stagnant water in containers, flower pots and clogged drains: encouragement of gotong-royong activities to ensure proper disposal of rubbish and avoidance of stagnant water; larvicidal treatment consisting of temephos or more popularly known as Abate: rapid fogging following notification of a suspected or confirmed case:enforcement in form of summons or jail term for inhabitants whose homes or workplaces have Aedes breeding sites.

More recent efforts have been allocated to the use of biological control using the bacterium Bacillus thuringiennsis, predatory mosquito Toxorhynchites and genetically modified Wolbachia infected male dengue vector to produce sterile offspring of Aedes mosquitos that has had moderate success in combating this menace. Disappointingly, the dengue vaccine has failed to deliver to its early promise and has unwittingly cause many deaths especially among children in Philippines.

CONCLUSION

In conclusion, this was an interesting case of 7-years-old boy who was diagnosed as septic shock despite initially thought to have severe dengue fever. This case emphasises the importance of recognising the tell-tale signs of sepsis such as non-resolving sepsis, poor perfusion and tachycardia as not to be missed signs. Even though dengue infection is not be missed in its diagnosis, other causes of unremitting fever such as septic shock should not be forgotten.

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