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## Acute brain hemorrhage in dengue

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### ABSTRACT

Dengue is a tropical arboviral infection that can have severe hemorrhagic complication. Acute brain hemorrhage in dengue is rare and is a big challenge in neurosurgery. To perform surgery for management of acute brain hemorrhage in dengue is a controversial issue. Here, the authors try to summarize the previous reports on this topic and compare neurosurgery versus conservative management.

## 1. Introduction

Dengue is a tropical arboviral infection that can have severe hemorrhagic complication. The hemorrhagic complication in dengue is due to the thrombocytopenia and can be seen at any organ<sup>[1]</sup>. The neurological hemorrhage in dengue is very interesting since it can be fatal<sup>[2]</sup>. Acute brain hemorrhage in dengue is rare and is a big challenge in neurosurgery. To perform surgery for management of acute brain hemorrhage in dengue is a controversial issue. Here, the authors try to summarize the previous reports on this topic and compare neurosurgery versus conservative management.

## 2. Materials and methods

The authors hereby use the standard database search

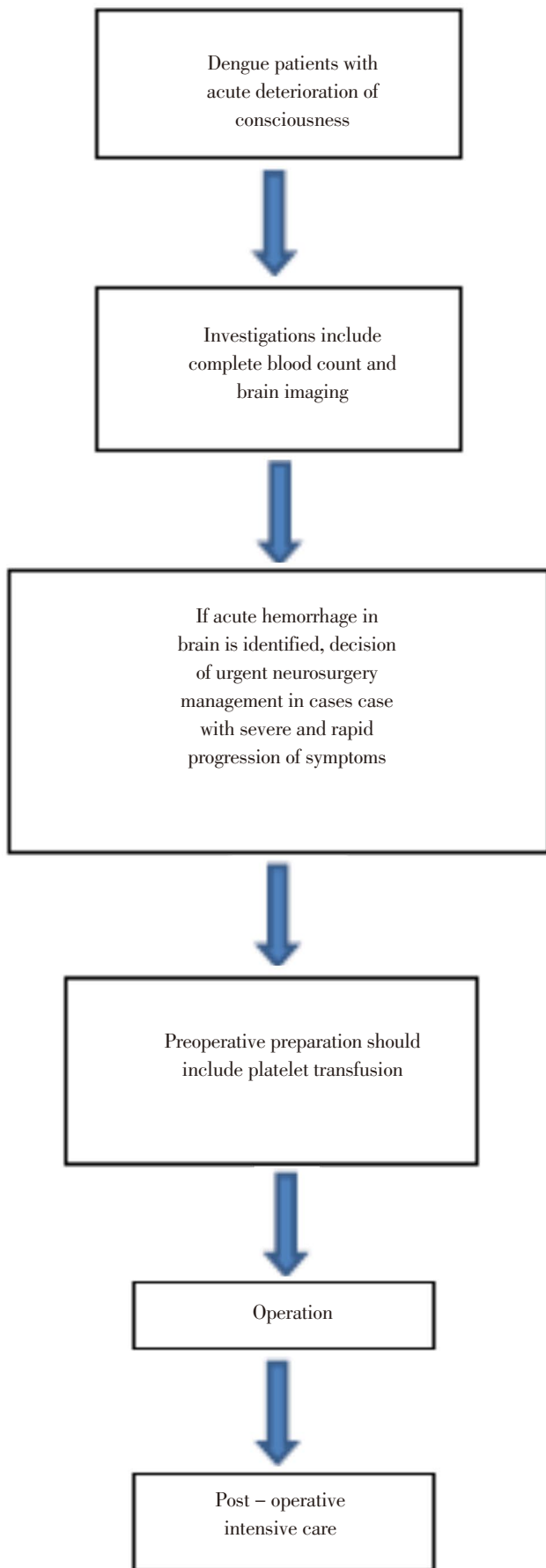
(PubMed) to find the reports on surgical management of brain hemorrhage in dengue. The key words for searching are “brain”, “dengue”, “hemorrhage” and “surgery”. The clinical details in each report were extracted. The comparison on clinical outcome of patients managed by neurosurgery and conservative management was performed.

## 3. Results

According to the search, 3 reports on 7 dengue patients with the complete data were on management of acute brain hemorrhage in dengue<sup>[3–5]</sup>. Of these 7 patients, there are 5 cerebral hemorrhage, 1 pontine hemorrhage and 1 subdural hemorrhage. All cases have severe thrombocytopenia. Of these 7 patients, neurosurgery is used in 3 cases and conservative treatment is used in the left 4 cases. All cases with neurosurgery have full recovery and 2 from 4 cases with conservative treatment have recovery with long term sequel (the other 2 left cases with conservative treatment end up with death).

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**Figure 1.** Step by step for management of dengue patients with acute brain hemorrhage.

#### 4. Discussion

To manage acute brain hemorrhage is a big issue in neurosurgery. There are many basic considerations before making decision<sup>[6]</sup>. The underlying bleeding tendency is usually the big consideration in neurosurgery. In acute situation, weighting between risk and benefit must be carefully done. In the case of dengue hemorrhagic encephalopathy, the management of acute brain hemorrhage is very complicated. With underlying severe thrombocytopenia, the neurosurgical management of brain hemorrhage can be very difficult.

Based on the present study, it seems that the use of neurosurgery is a good choice in management of brain hemorrhage in dengue. The preparation of the patient by platelet transfusion is suggested<sup>[3]</sup>. Very good outcome can be observed. Whereas conservative treatment seems to be inferior with a poorer outcome, more fatality and long term sequelae.

The neurosurgery management of acute brain hemorrhage in dengue is suggested due to its good outcome.

#### Conflict of interest statement

The authors report no conflict of interest.

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