

# Spontaneous Spinal Epidural Hematoma in a Case of Dengue Fever - A Management Conundrum

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**Abstract:** Dengue fever is common health problem in the Indian subcontinent especially in the northern planes. While most of the cases recover uneventfully with supportive care, many have complications requiring hospital admission. Hemorrhagic complications are rare. Still rarer are complications involving the CNS. Even though, hemorrhages in CNS are routinely managed by neurosurgeons, in case of dengue fever with severe thrombocytopenia it is a "Scylla and Charybdis" like situation. To decompress the hemorrhage with operative intervention risks uncontrollable hemorrhage and not to emergently decompress risks life and limb of the patient. The most pragmatic approach for these situations is still evolving and there are no guidelines to help the individual surgeon navigate through such situations. Our case presents the similar dilemma. This young woman presented with quadriparesis which developed into plegia. However, because of very low platelet counts, she was not operated early on. The final result even after thorough decompression was very dismal. She continues to be quadriparetic (paraplegic) after almost 2 years of follow up. We feel that after explaining to the patients, the risks of surgery in presence of thrombocytopenia, the extradural hemorrhages should be evacuated with ongoing platelet correction instead of waiting for platelet counts to become normal. This has a higher chance of giving a useful life to the patient.

**Keywords:** Dengue, Spinal epidural hematoma, thrombocytopenia, quadriplegia.

## 1. Introduction

Neurological complications associated with Dengue fever are rare and spinal epidural hematoma is even rarer. A 43 year old lady presented with acute quadriparesis preceded by fever of one week duration. Investigations revealed positive serology for Dengue and severe thrombocytopenia. MRI revealed extradural spinal hematoma from C5 to D6 which was evacuated. In spite of complete decompression of hematoma and dramatic relief of cord compression, the patient's quadriplegia has not recovered over a 2 year follow up. The risk of long term morbidity due to delay in surgery because of thrombocytopenia needs to be pragmatically balanced against the dogmatic belief of getting the platelet counts to adequate level before putting an incision.

## 2. Case Report

A 43 year old female had fever lasting for one week and developed sudden onset weakness of both lower limbs which progressed to complete loss of function within two hours. Simultaneously, she developed weakness of both upper limbs. She also developed numbness of both lower limbs as well as loss of bladder and bowel function.

On examination, she was afebrile. Higher mental functions were normal. There was hypotonia in the limbs and power was grade 0/5 in the lower limbs. Power was grade 2/5 at the shoulder and elbow with weakness of grip (unable to hold cup). The deep tendon reflexes were absent. All modalities of sensation were lost in the lower limbs and blunted up to C5.

A possibility of transverse myelitis was considered and she was started on methylprednisolone. Investigation revealed a Hb of 13.6g%, WBC of 9700/mm<sup>3</sup>, with DLC of N66L15M18E1 and platelet count of 43000/mm<sup>3</sup>. IgM was positive for Dengue. Renal functions, liver functions and ECG were normal.

MRI revealed collection in the posterior epidural space from C5 to D6 being hyper-intense to iso-intense on T1WI and

mixed intensity on T2WI with heterogeneous blooming on GRE. Subtle enhancement was noted on contrast and the spinal cord was displaced anteriorly. (Fig1)

Patient was transfused six units of platelets. A cervico-dorsal laminectomy from C5 to D6 was done which revealed a hematoma in the epidural space which was evacuated. (Fig 2) Five days later, she developed respiratory distress and underwent a tracheostomy. Mechanical ventilation was instituted. Gradually she was weaned off from the ventilator. She did not show any improvement in neurological function.



Fig 1a (top left): Sagittal T1 MRI of Cervico-thoracic spine showing iso-intense collection in epidural space from C5-6 interspace level going downwards

Fig 1b (top right). Sagittal T2 MRI showing mixed intensity collection in epidural space from C5-6 interspace level going downwards

Fig 2a (Bottom left). Postoperative T1 MRI showing absence of any collection in the epidural space and opening up of subarachnoid space (marked with arrows) after removal of epidural collection

Fig 2b(bottom right).Postoperative T2 sagittal MRI clearly demarcating the opened up subarachnoid space(marked with arrows) and complete relief of cord compression.

### 3. Discussion

Neurological symptoms associated with Dengue may manifest as headache, seizures, alteration of sensorium, stroke and rarely as a spinal compression due to subdural and subarachnoid hemorrhage and cord involvement<sup>(1,2)</sup>. Spinal extradural hematoma manifesting as a complication of Dengue fever is rare and few cases have been reported in the literature<sup>(3,4,5)</sup>.

Incidence of Dengue cases has been rising in India during the last few years thereby posing a severe public health problem<sup>(6)</sup>. Dengue virus is an arthropod borne virus of genus Flavivirus belonging to family Flaviviridae. Any of the four strains of Dengue virus 1, 2, 3 or 4 may be responsible.

The pathogenesis of bleeding tendency is multifactorial and attributed to vasculopathy, coagulopathy, platelet dysfunction and thrombocytopenia. Central and peripheral nervous system may be involved in Dengue but presentation as a transverse myelitis is extremely rare. It can affect any segment of spinal cord but the thoracic segments are most commonly involved. In our patient, it was a long segment involvement of both cervical and thoracic regions.

Our patient did not show any meaningful neurological improvement despite evacuation of hematoma as was the experience of Singh and Joseph and Manmohan Singh. However, the case described by Fong et al improved neurologically as was the case described by Verma et al in 2011.

The bleeding tendency seen in dengue is due to thrombocytopenia, capillary leakage, coagulation abnormalities and hepatic dysfunction. In our case, thrombocytopenia appears to be a plausible explanation as the coagulation profile and hepatic function were normal. Sudden loss of neurological function with areflexia carries bad prognosis.

In case of possibility of devastating long term morbidity as in our case with spinal epidural compression, instead of dogmatically following the platelet counts, it would probably be better for the patient, had she been operated with ongoing platelet transfusions.

### 4. Conclusions

It is important to strike a balance between surgical dogmatism and pragmatism. While surgical dogmatism definitely prevents complications, if balanced with pragmatism, it can further improve outcomes. Our patient may have had a better outcome had she been operated earlier on for her extradural spinal hematoma with ongoing platelet correction rather than waiting for platelet count to recover to 'safe' levels. This 'safety' may have cost the patient her limbs and useful life. Such situations like ours, as has been

pointed out are uncommon as percentages, but still occur in large number due to our large population factor.

### References

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### Legends for figures

Fig 1a: Sagittal T1 MRI of Cervico-thoracic spine showing iso-intense collection in epidural space from C5-6 interspace level going downwards

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