International Journal of Contemporary Pediatrics
Prasad SPS et al. Int J Contemp Pediatr. 2026 May;13(5):788-793
http://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: https://dx.doi.org/10.18203/2349-3291.ijcp20261149

Case Report

Post-dengue encephalitic sequelae in a child: significant functional recovery with ayurvedic intervention - a case report

Shyam Prasad P. S.[1], Manisha Singla[2]*, Sheethal R.[3]

[1]Consultant Ayurveda Physician and General Surgeon, Yogakshema Ayurved Hospital, Kushalanagar, Kodagu, Karnataka, India
[2]Ayushman Arogya Kendra Chamaru, Directorate of Ayurveda, Government of Punjab, Punjab, India
[3]Psychologist and Certified International Yoga Teacher (RYT), Yogakshema Ayurved Hospital, Kushalanagar, Kodagu, Karnataka, India

Received: 26 February 2026
Revised: 04 April 2026
Accepted: 05 April 2026

***Correspondence:**
Dr. Manisha Singla,
E-mail: dr.manisha.singla@gmail.com

ABSTRACT

Dengue encephalitis is a rare and severe neurological complication of dengue viral infection, often resulting in debilitating long-term deficits characterized by viral neuro-invasion, cerebral edema, and in severe cases herniation. As mentioned in ayurvedic texts, Jwara (fever) can lead to Raktapitta (Hemorrhagic conditions) and can further cause dhatukshaya (depletion of dhatus) leading to shosha (emaciation). We present a case of a 6-year-old boy with marked physical and neuropsychological impairments after dengue encephalitis at age 4. Despite initial emergency care, the patient exhibited significant motor weakness, speech and cognitive delays and functional dependence. Following comprehensive Ayurvedic therapy on the treatment principle of santarpana (restoring strength, nourishment and tissue integrity) and brimhana (nourishing therapy), he demonstrated remarkable recovery in over 9 months with restoration of motor skills, cognition and social functioning. This case highlights the potential benefits of a comprehensive ayurvedic rehabilitative approach in chronic post-dengue neurological sequelae.

Keywords: Dengue encephalitis, Jwara, Panchkarma, Pediatric neurorehabilitation, Santarpana - brimhana therapy

INTRODUCTION

Dengue is a mosquito borne viral disease primarily transmitted by Aedes mosquitoes that is widespread throughout the tropical and subtropical regions worldwide.[1] While most dengue infections are either asymptomatic or result in mild febrile illness, severe complications such as hemorrhagic manifestations and shock syndrome may occur. Neurological complications, including encephalitis, though less common, are increasingly recognized and carry high morbidity and mortality. Recovery of the virus from cerebrospinal fluid (CSF) and brain tissue provides evidence that it can cross the blood–brain barrier and directly infect the central nervous system.[2] Reported rates of dengue encephalitis among hospitalized patients range from 0.5% to 5.4%, although figures vary across studies and geographical areas.[3,4] Case fatality rates are estimated at 22% to 33%, with rapid clinical deterioration commonly leading to cerebral edema, herniation, and death within days of symptom onset.[5] Pediatric survivors frequently face long-term neurological and cognitive impairments, posing challenges for rehabilitation. In Ayurveda, Acharya Charak has mentioned that elevated temperatures in jwara can cause raktapitta and raktapitta can cause jwara. Both the diseases can lead to dhatukshaya (depletion of dhatus) and shosha (emaciation).[6,7] In this case dengue fever is causing shiro marma-aghaat (Injury to vital part- head)

leading to Raktapitta (hemorrhagic conditions). Due to rakta-strav (hemorrhagic conditions) and marma chedda (Injury to vital part), depletion of dhatus is leading to dhatukshaya janya vata vyadhi (Vata disorders arising due to depletion of body tissues). Therefore, vata vyadhi treatment principle – brimhana (nourishing therapy), snehana (oleation), swedana (sudation), medhya dravya (nootropic drugs) and karma abhyaas (rehab activities) was applied on this case along with psychological reassurance and motivation.[8] This report documents the clinical course, radiological findings, multidisciplinary care and outcomes of a child affected by severe post-dengue encephalitis sequelae.

CASE REPORT

A 6-year-old male presented in December 2024 with history of dengue encephalitis in 2022. Patient had marked weakness in right upper and lower extremities, tremors in hands, delayed verbal response, unable to walk beyond 5 steps without support, pain while walking and highly dependent on caregiver for daily activities.

Past history

In July 2022 Patient suffered from dengue at 4 years of age which progressed to dengue encephalitis. MRI revealed evidence of hemorrhagic changes consistent with dengue hemorrhagic encephalitis. Patient was admitted to hospital and emergency care was given. Post-emergency care, the patient had severe physical and cognitive impairments:

Motor: Severe proximal and distal muscle weakness predominantly affecting the right upper and lower limbs, difficulty walking more than five steps due to shaking legs with pain.

Neuromotor: Difficulty maintaining hand grip resulting in spillage from a cup held for even brief durations.

Speech and cognition: Inability to form full sentences, poor memory, latency of 2-3 minutes to respond to simple questions.

Functional: Dependent on assistance for feeding, unable to participate in age-appropriate play or schooling, social withdrawal with fearfulness and avoidance of peers.

Writing: Extremely slow writing speed, requiring minutes for a single alphabet.

Neonatal history

Antenatal: Polyhydroamnios+

Natal: Full term, LSCS, Birth weight 3.65 kg cried immediately after birth

Post natal – H/O NICU admission for sepsis for 3 days

Developmental history

Normal for the age, Neck holding- 3 months, roll over -5 months, sits with support -6 months, sits without support -7 months, stands with support - 9 months, walks with support -1 year, walks without support -1 year 6 months.

Clinical findings: physical examination (December 31, 2024)

Weight: 22 kg

General: Stable vital signs, alert but fatigued child.

Neuromuscular: Marked weakness in right upper and lower extremities compared to left, generalized hypotonia, diminished fine motor control, tremors in hands.

Cranial nerves: No gross deficits, but delayed verbal responses and suspected mild hearing impairment reported.

Gait and posture: Unable to ambulate unaided beyond five steps, unsteady, pain limiting mobility.

Reflexes: Normal deep tendon reflexes, no pathological reflexes elicited.

Sensory examination: Limited due to cooperation but no clear deficits appreciated.

Functional status: Dependent on caregiver for daily activities; demonstrated poor coordination on simple tasks

Ayurvedic assessment

Constitution (prakriti): Vata-Kapha predominance

Agni (digestive/metabolic fire): Manda (diminished)

Srotas (channels): Margavarodha (obstructed), especially in neurological and musculoskeletal channels

Manasika bhavas (mental state): Diminished concentration, lethargy (Bhrama, Mada), fearfulness (Bhaya)

Sparsha (tactile sense): Hypotonia and tremors suggest Vata imbalance

Other findings: Mala (bowel) irregularities, sleep disturbances reported by mother

Timeline

A detailed timeline of the events of the case is presented in Table 1.

Diagnostic assessment

25/7/2022- *MRI brain*: Supra tentorial region: Few focal areas with restricted diffusion and corresponding low ADC values noted in the subcortical white matter at left parietal, right occipital, bilateral hippocampus, middle cerebellar peduncles midbrain and pons. Altered area of signal intensity measuring 2.5X1.5 cm noted in midbrain appearing heterointense on T1 and T2 with blooming on GRE sequence – S/O intraparenchymal bleed. Features consistent with dengue hemorrhagic encephalitis.

27/12/2024 – *CT brain*: Small well defined hypodense area seen in mid pons-chronic infarct. Prominent cerebellar folia – cerebellar atrophy. Small calcified granuloma seen in left frontal lobe without perifocal edema.

Table 1: Timeline.

20 July 2022	Patient was 4 years old diagnosed with dengue
25 July 2022	Progressed to dengue encephalitis. MRI revealed hemorrhagic changes consistent with dengue hemorrhagic encephalitis. Patient was admitted to hospital and emergency care was given.
27 December 2024	Patient suffered from severe vomiting and was admitted in hospital for acute care. CT imaging showed a small well-defined hypodense lesion in the mid-pons suggesting chronic infarct, cerebellar atrophy, and a small calcified granuloma in the left frontal lobe.
31 December 2024	Patient now 6year old presented in ayurvedic hospital
9 January 2025	Ayurvedic treatment started after thorough examination
9 October 2025	The child regained near-normal motor function, communication, cognition, and academic performance, reflecting substantial recovery.

Table 2: Details of external and internal treatment.

S. no.	Drug	Dose	Route	Duration
1	Saraswatarishta	10 ml once a day with 20 ml water at bedtime	Orally	9 months
2	Brahmi ghrita saptavrutti capsules	1 capsule twice a day morning – evening 30 mins before food with warm water	Orally	
3	Calcitone syrup	10ml once a day – evening after mid meal	Orally	
4	Balavishnu oil	Full body massage for 30 mins	External	
5	Swedana	Mamsa pinda sarvanga sweda with bala moola ksheer kshaya – 30 mins session, 4 days/ week	External	

Table 3: Outcome - paediatric stroke outcome measure (PSOM) scoring.

Domain	Pre-treatment score (December 2024)	Post-treatment score (October2025)	Pre-key findings	Post key findings
Right sensorimotor	1	0.5	Power 3/5, hypotonia, tremors, circumduction gait	Near-normal strength, no tremors, normal gait/squats
Left sensorimotor	0.5	0	Power 4/5, mild hypotonia/tremors	Fully normal power/coordination
Language production	1	0	Delayed verbal output, fatigue	Normal communication, confident
Language comprehension	1	0	Delayed responses	Normal comprehension, academic rank 3rd
Cognitive/ behavioral	1	0	ADL dependence, poor coordination	Full ADL independence, peer engagement

Therapeutic intervention

The patient was managed with a combination of oral medications, panchkarma therapies, neuro rehabilitation, physical exercises psychological counselling sessions for period of nine months. The details of panchakarma procedures and internal medications provided in Table 2.

Rehabilitation and psychosocial support

Guided physical exercises, yoga and neuro-rehabilitation techniques, Monthly counselling sessions for mother and child for psychological reassurance and motivation.

Outcomes

After 9 months of therapy (by October 2025), the patient demonstrated:

The patient has achieved restoration of near-normal motor strength in all limbs, with no residual tremors. They are able to ambulate independently with a normal gait and can run, cycle, and perform squats without difficulty. Fine motor skills have normalized, and their writing speed is comparable to that of their peers. Academically, the patient ranks third in the class, demonstrating good comprehension and effective communication. Socially, they are confident and actively engage with both peers and adults without fear. Overall, the patient maintains functional independence in all daily activities.

CT brain (23rd October 2025): Soft tissue swelling in left frontal scalp. Prominence of folia of cerebellar hemisphere with diffuse atrophy of pons. Focal hypodensity is seen in pons.

EEG report (9th December 2025): Within normal limits. The PSOM is a validated neurological outcome measure specifically designed for pediatric stroke patients.[9] The outcomes during the course of treatment are included in Table 3.

Interpretation

On admission, the patient with dengue encephalitis had moderate neurological deficits on PSOM, correlating with sensorimotor weakness, hypotonia, tremors, gait abnormality, delayed speech, impaired comprehension, and ADL dependence. Post-treatment, PSOM scores improved from 0.5-1 to 0-0.5 across all domains. Clinically, this matched restoration of motor power, resolution of tremors, normalization of gait, and recovery of language and cognition. The child achieved full independence in daily activities and normal communication. The significant PSOM improvement indicates reversal of encephalitic neurological deficits.

DISCUSSION

Dengue can be correlated with Aagantuj Jwara (fever caused by an external etiological factor as it arises due to an external causative factor in the form of a viral infection transmitted by a mosquito bite. As the disease progresses, internal dosha prakopa (vitiation of bodily humors)occurs, leading to a nijotpanna stage.[10] In severe cases such as dengue encephalitis, there is predominant Pitta–Vata dosha involvement, where Pitta is responsible for high-grade fever, inflammation, and systemic toxicity, while aggravated Vata leads to neurological manifestations such as altered sensorium, convulsions, delirium, and loss of consciousness.[11] The condition involves Rakta Dhatu, evident from thrombocytopenia and hemorrhagic tendencies, and further spreads to Majja Dhatu and Manovaha Srotas, resulting in encephalitic features.[12,13] Thus, dengue encephalitis may be understood as a complicated aagantuj Avisama Sannipataja Jwara with Majja-dhatu gati, showing resemblance to Visha-janya jwara (fever caused by toxic substances) due to its severe toxic manifestations.[14]

Dengue encephalitis causes multifocal brain injury characterized by hemorrhagic, infarct, and inflammatory lesions involving cerebrum, brainstem, and cerebellum as evidenced in MRI and CT scans. Rare in children, it often leads to persistent neurocognitive deficits and motor disabilities due to neural tissue loss and dysfunction.[15] The comprehensive Ayurvedic intervention focuses on: The therapeutic approach focused on balancing Vata dosha, which is implicated in neurological dysfunction, while incorporating Medhya Rasayana therapies such as Saraswatarishta and Brahmi Ghrita to support neural protection and cognitive restoration.

External therapies were employed to enhance muscle strength, improve circulation, and reduce spasticity. Active participation of caregivers in the therapy process served as a key rehabilitative factor, complemented by psychosocial counseling to promote mental and emotional wellbeing.

Brahmi ghrita saptavritti

This medicated ghee, referenced in Ashtanga Hrudaya, was chosen for its potent Medhya Rasayana (intellect-promoting) properties. Its composition, which includes Brahmi (Bacopa monnieri), Shankhapushpi (Convolvulus pluricaulis) and other herbs, is known to have a profound effect on the nervous system. As a Tridoshahara and Srotoshodhana (channel-clearing) agent, it facilitates the removal of obstructions and nourishes the brain tissue.[16] It's specific indications for buddhimandya (cognitive deficit), smriti (memory), and swara vaikalya (speech impairment) directly addressed the post-encephalitic deficits.[17,18] Furthermore, its Tikta Rasa and psychotropic qualities provided a calming effect, addressing the patient's anxiety and depressive symptoms.[19]

Saraswatharishtam

This liquid formulation, mentioned in Rasayanadhikara, served as a critical component for its Mastishka Poshana (brain nourishing) and Rasayana (rejuvenative) effects. Indicated for conditions like apasmara (epilepsy), swarabhanga (voice changes), and masthishka janya roga (diseases of cerebral origin), it actively supported the restoration of neurological function.[20] Its Vak Vishudhikara (speech clarity) and Mano Vaha Sroto Balya (strengthening mental channels) properties were instrumental in improving cognitive and speech functions.[21,22] The Mana Prasadaka (mind soothing) effect of this medicine was also crucial in alleviating the patient's psychological distress.

Calciton with iron syrup

A proprietary Ayurvedic formulation, this syrup provided vital nutritional support. Ingredients like Ashwagandha (Withania somnifera), known for its adaptogenic and nervine tonic properties, contributed to nerve strength and overall vitality.[23,24] The presence of Lohasava (an iron preparation) addressed any potential iron deficiencies, supporting healthy blood and oxygen transport to the brain. This combination complemented the primary therapies by ensuring the body had the necessary building blocks for healing and regeneration.[25]

Balavishnu oil

A proprietary Ayurvedic formulation composed of Bala (Sida cordifolia), guggul (Commiphora mukul), kama kasturi (Ocimum basilicum), nirgundi (Vitex negundo), patala (Stereospermum suaveolens) beneficial for muscle weakness and inflammation. It is mainly indicated for infants and children to improve strength and immunity, support proper growth and development, and protect from common childhood ailments.[26] Regular gentle massage with this oil helps reduce dryness of the skin while maintaining its natural softness. It provides relief from minor body aches and fatigue, promotes sound and restful sleep, and supports neuromuscular development by improving blood circulation throughout the body.[27,28]

Mamsa pinda sweda

Herbal fomentation from Ashtanga Hridaya combining Bala (Sida cordifolia) and aja mamsa (Goat meat) boluses with Bala Moola decoction.[29] Engaging caregivers in the rehabilitation process, providing education on the child's condition and prognosis, and offering emotional support can help optimize outcomes and promote long-term success.[30] Although such recovery is unusual given chronic neuroimaging abnormalities, neuroplasticity and multifactorial rehabilitation may explain functional restitution. This suggests potential adjunct roles for Ayurveda in post-encephalitic neuro-rehabilitation warranting further clinical trials.

CONCLUSION

This report presents a rare case of a child with severe post-dengue encephalitic neurological se-quelae achieving remarkable recovery with Ayurvedic intervention combined with rehabilitation and psychosocial support. Ayurvedic medhya herbs and treatments exert neuro-regenerative effects by modulating oxidative stress, inflammation, and neurotransmitter systems, while external therapies improve muscle tone and circulation. These mechanisms synergize with modern neu-rehabilitation to foster brain plasticity. Conventional medical management focuses on acute care, but limited options exist for chronic recovery. Ayurvedic medicine, with its holistic therapeutic principles, may offer adjunctive benefits in neural restoration and functional recovery.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Sreedharan A, R VL, B V. Ayurvedic Management of Dengue Haemorrhagic Fever with Menorrhagia: A Case Report. J Ayurveda Integr Med. 2024;15(3):100923.
2. Chowdhury AS, Ayaz KFM, Marisa SF, Tabassum A, Rafsana H, Hasan MI, et al. Dengue Encephalitis as An Underrecognized Cause of Acute Coma and Neuroendocrine Dysfunction: A Case Report with Literature Review. Clin Infect Pract. 2025;26:100493.
3. Cam BV, Fonsmark L, Hue NB, Phuong NT, Poulsen A, Heegaard ED. Prospective Case-Control Study of Encephalopathy in Children with Dengue Hemorrhagic Fever. Am J Trop Med Hyg. 2001;65(6):848-51.
4. Mehta VK, Verma R, Jain A, Sharma N, Mahdi AA. A Study of Dengue Encephalitis with Laboratory and Clinical Parameters in Tertiary Center of North India. J Fam Med Prim Care. 2021;10(11):4041-6.
5. Kurhade A. Death Due To Dengue Encephalitis: A Rare Case Report. J Clin Diagn Res. 2023;17(10).
6. Yadavji T. Charaka Samhita of Acharya Charaka, Sthana Chikitsa, Chikitsa Jwara. 2nd Ed. Varanasi: Chaukhamba Orientalia. 2011;406-7.
7. Deole YS. Apasmara Nidana Adhyaya. 1st Ed. Jamnagar, Ind: CSRTSDC. 2020.
8. Mangalasseri P. Vatavyadhi Chikitsa Adhyaya. Charak Samhita New Edition. 1st Ed. Jamnagar, Ind: CSRTSDC. 2020;75-83.
9. Kitchen L, Westmacott R, Friefeld S, MacGregor D, Curtis R, Allen A, et al. The Pediatric Stroke Outcome Measure: A Validation and Reliability Study. Stroke. 2012;43(6):1602-8.
10. Kapgate YP, Mundane RJ, Pawade SA. Ayurvedic Approach To Dengue Fever (Vishamjwar/ Dandak Jwara). J Pharmacogn Phytochem. 2024;13(5):266-70.
11. Bhagwatkar NV, Laddha S. Ayurvedic Management Of Dengue Fever - A Case Study. J Ayurveda Integr Med Sci. 2025;9(10):251-5.
12. Weerasinghe WS, Medagama A. Dengue Hemorrhagic Fever Presenting as Encephalitis: A Case Report. J Med Case Rep. 2019;13(1):278.
13. Chavda VP, Kumar A, Banerjee R, Das N. Ayurvedic and Other Herbal Remedies for Dengue: An Update. Clin Complement Med Pharmacol. 2022;2(3):100024.
14. Shinde DL, Mohite YL. Conceptual Study of Dengue Fever on The Basis of Ayurved. Int Ayurvedic Med J. 2021;9(4):823-8.

15. Borawake K, Prayag P, Wagh A, Dole S. Dengue Encephalitis. Indian J Crit Care Med. 2011;15(3):190-3.
16. Tripathi B. Ashtang Hridyam of Shrimad Vagbhat. Chaukhambha Sanskrit Pratishthan, Uttartantra. Chapter 7 Unmaad Pratished. 2003;932.
17. Yadav KD, Reddy KRC, Kumar V. Beneficial effect of Brahmi Ghrita on learning and memory in normal rat. AYU (An Int Q J Res Ayurveda). 2014;35(3):325-9.
18. Deole YS, Chandola HM. A clinical study on effect of Brahmi Ghrita on depression. AYU (An Int Q J Res Ayurveda). 2008;29(4):207-14.
19. Mishra SN. Bhaisajya Ratnavali of Kaviraj Govind das Sen: Saraswatarisht. Varanasi: Chaukhamba Surbharati Prakashan; 1st ed. 73rd Chapter – Rasayan Adhikaar. 2005;1122-3.
20. Prabhu J, Jayakumari S, Prabhu K, Kumar JA, Subramanian M, Kavimani S. Saraswatarishta reverses neuronal injury in brain tissues of scopolamine-induced rat model. J Anat Soc India. 2019;68(4):269-73.
21. Rajopadhye DR, Sahasrabudhe AR. Memory enhancing activity of Saraswatarishta in mice. Biomed Pharmacol J. 2020;13(4).
22. Mikulska P, Malinowska M, Ignacyk M, Krzek J, Sira-Romero I, Kurnik M, et al. Ashwagandha (Withania somnifera) — current research on the health-promoting activities: a narrative review. Pharmaceutics. 2023;15(4):1057.
23. Singh N, Bhalla M, De Jager P, Gilca M. An overview on Ashwagandha: a Rasayana (rejuvenator) of Ayurveda. Afr J Tradit Complement Altern Med. 2011;8(5):208-13.
24. Gupta V, Reddy KRC. Clinical evaluation of Lohasava in the management of Pandu Roga. AYU (An Int Q J Res Ayurveda). 2007;28(3):49-56.
25. Gore M, Sharma GB. Role of Tailabhyanga in Balyawastha and its benefits: a review study. J Ayurveda Integr Med Sci. 2023;6:105-8.
26. Shailaja U, Rao PN, Debnath P, Adhikari A. Exploratory Study on The Ayurvedic Therapeutic Management of Cerebral Palsy in Children at a Tertiary Care Hospital of Karnataka, India. J Tradit Complement Med. 2014;4(1):49-55.
27. Sharma P, Nariyal V, Sharma S, Sharma A. Reproductive and child health care through Bala Taila: a review on Ayurveda formulation. Int J Res Ayurveda Pharm. 2017;8(3):1-4.
28. Acharya RS, Preethi S, Shaila B. Neuro-muscular rehabilitation through Basti and Mamsa Pinda Sweda in Hirayama disease. Ayushdhara. 2025;12(4):190-4.
29. Biyani AM, Sharath V, Varma TS. Effect of pediatric rehabilitation on children with viral encephalitis: a case report. Cureus. 2024;16(3):e57239.

Cite this article as: Prasad SPS, Singla M, Sheethal R. Post-dengue encephalitic sequelae in a child: significant functional recovery with ayurvedic intervention - a case report. Int J Contemp Pediatr 2026;13:788-93.