Journal of Ayurveda and Integrative Medicine 15 (2024) 100923

Contents lists available at ScienceDirect

Journal of Ayurveda and Integrative Medicine

journal homepage: elsevier.com/locate/jaim

Ayurvedic management of dengue haemorrhagic fever with menorrhagia: A case report

Archana Sreedharan [a,*], Vijaya lekshmi R [b], Vishnu B [c]

[a] Dept of Prasutitantra-Striroga, Shri Dhanwantry Ayurveda College and Hospital, Sector 46 B, Chandigarh, India
[b] Regional Ayurveda Research Institute, Itanagar, Arunachal Pradesh, India
[c] Department of Kayachikitsa, Glocal University, Saharanpur, India

ARTICLE INFO

Keywords:
Dengue haemorrhagic fever
Menorrhagia
Ayurveda
Sannipata jwara
Sudarshana Ghana vati
Sitopaladi choorna

ABSTRACT

Dengue fever is one of the most common tropical disease affecting humans. Symptomatic dengue infection causes a wide range of clinical manifestations from mild dengue fever to potentially fatal disease such as DHF or DSS. Menorrhagia is rarely presented as a symptom in females with DHF. It is often unnoticed in adolescents who has history of irregular menstruation especially in case of PCOS. This case discusses about an adolescent girl who presented with heavy menstrual bleeding, reddish discolouration of urine, severe abdominal pain, generalised body ache, mild head ache, nausea and fever along with a history of irregular menstruation. Dengue fever along with covid-19 was suspected due to the presentation and the patient revealed a travel history to relative's house. Ayurvedic medicines were administered according to patient's condition. The disease was confirmed as Dengue Haemorrhagic fever by Dengue IgM antibody, Dengue IgG Antibody, NS1 Ag and low platelet count, along with negative RT-PCR for Covid-19. This case serves as a valuable case study in DHF, which can be overlooked by Gynaecologists due to its co-presentation with menstruation, especially in patients with a history of irregular menstruation due to PCOS. Further more this case demonstrates the efficacy of simple, cost effective *Ayurvedic* interventions, which can be successfully utilized in fatal diseases like DHF with proper monitoring and follow up.

1. Introduction

Dengue is a mosquito borne viral disease that is widespread throughout the tropics. The incidence of dengue has grown dramatically around the world in recent decade. The largest number of dengue cases ever reported globally was in 2019. Dengue is a severe flu like illness that affects almost all age group with symptoms that usually lasts for 2–7 days. Clinical manifestations of dengue can range from mild acute undifferentiated febrile illness to classical Dengue fever, Dengue Haemorrhagic fever and Dengue Shock Syndrome. WHO guidelines of 1997 and the further revisions in 2009 has categorized dengue into dengue (with or without warning signs) and severe dengue [1]. Secondary dengue infection is the main factor implicated in the development of DHF and can cause severe mucosal bleeding manifesting as hematemesis, melena and menorrhagia or concealed haemorrhage to many organs [2]. An abrupt increase in temperature, facial flush, and other symptoms resembling dengue fever, such as anorexia, vomiting, headaches, and aching in the muscles or joints, mark the beginning of the clinical course of DHF. A few days after the onset of fever, the patient's health worsens in moderate to severe cases. Frequent vomiting, abdominal pain, refusal of oral intake, lethargy, restlessness or irritable behaviour, postural hypotension, and oliguria are examples of warning signs [3]. DF and DHF remains a serious public health problem globally. Accurate and prompt clinical diagnosis for DENVs infection as well as early detection of the DHF are urgently demanded.

Current dengue case management are mainly supportive in nature according to stage of disease and symptoms. In case of severe dehydration or intravascular volume depletion due to plasma leakage, intravenous fluid treatment is needed and in cases with significant haemorrhage blood transfusion is required [4].

As per *Ayurveda*, signs and symptoms of Dengue haemorrhagic fever may be correlated with *lakshanas* of *sannipata jwara* in the body. The main features of DHF like *raktapittashteevanam*, *syavaraktamandala darshana*, (Purpura, Gum bleeding, patechia), *asti sandhi shiro ruja* (aches and pains in bones, joints and head), *thandra* (lethargy), *aruchi* (anorexia), *srastangata* (weakness of body), *udara gurutwam* (heaviness

Peer review under responsibility of Transdisciplinary University, Bangalore.
* Corresponding author. Department of Prasutitantra-Striroga, Shri Dhanwantry Ayurvedic College and Hospital, Sector 46 B, Chandigarh, India.
E-mail address: archanas875@gmail.com (A. Sreedharan).

https://doi.org/10.1016/j.jaim.2024.100923
Received 28 January 2022; Received in revised form 19 July 2022; Accepted 28 March 2024

in abdomen) etc can be seen in *sannipata jwara*. Dengue shock syndrome can be considered as *sannipata jwara* with all *lakshanas* ie. features of DHF along with *moha* (fainting), *pralapa* (CNS involvement), *kasa, swasa* (respiratory distress), *hridi vyadha* (cardiac involvement), *sweda, mootra pureesha adarsan* or *alpata* (renal impairment) and can be fatal (*Asadhya*) [[5] Chapter 3,Verse 103-109]. *Jwara* is *Amashayasraya* which is *Kaphastana*. According to *Acharya Charaka, sannipatajwara* should be treated with medicines according to *doshic* predominance and *stana* of *dosha*(location of *dosha*) [[5] Chapter 3,Verse 285-286]. The patient presented with the symptoms of *pitta* predominant *sannipatajwara* like *balasamkshaya* (severe weakness) and *raktamutrata* (haematuria with excessive menstrual bleeding) [[5] Chapter 3, Verse 95] with *amavastha*. A wide range of treatment options are available in classics for various types of *Jwara* (fever) and they are decided based on the predominance of *doshas* along with other physiological and pathological factors involved. The outcome of this case suggests faster recovery from fatal disease like Dengue haemorrhage fever with simple *Ayurvedic* medicines.

2. Patient information

An adolescent girl, aged 15 years, presented with complaints of heavy menstrual bleeding accompanied by abdominal pain, high grade fever in the morning (103°F), nausea, vomiting, mild headache and body pain in the gynaecologic opd on October 15, 2020. According to her parent's account, the complaints began 5 days prior as mild fever and body pain. However due to fear of covid −19, she ignored it and didnot seek medical attention. After two days, vaginal bleeding commenced, which intensified and accompanied by clots and abdominal pain. She changed 5–6 fully soaked pads per day. The patient's condition deteriorated over the next two days as she abstained from food altogether, and her temperature rose to 103°F in the early morning. Her parents administered paracetamol, purchased over the counter. Subsequently fever subsided and she was then taken to the hospital.

2.1. Menstrual history

The patient presented with severe lower abdominal pain, heavy vaginal bleeding, red coloured urine, mild headache, body pain and loss of appetite with severe weakness on October 15, 2020. The patient had menarche at the age of 12 years; she usually had 3–5 days bleeding at an interval of 2–5 months with no abdominal pain. Three weeks prior, she had visited the hospital for complaint of amenorrhoea lasting for 6 months. She was diagnosed with Polycystic ovarian syndrome and experienced menstruation after 4 days with *Ayurvedic* medication, which lasted for 5 days with no other associated complications. The patient then discontinued the medication after the onset of menstruation. Refer Table 1 for list of *Ayurvedic* medication prescribed for the induction of menstruation.

3. Clinical findings

Upon observation, she expressed difficulty walking due to abdominal pain and weakness. She appeared restless during conversation. Upon examination, her temperature was recorded as 98.4 ° F.

4. Timeline

The detailed timeline of the case is decribed in Table 1.

5. Diagnosis

A provisional diagnosis of Dengue Haemorrhagic Fever was made based on the patient's history and examination. The final diagnosis was confirmed after the laboratory reports showed a low platelet count, NS1Ag, Dengue IgM Antibody and Dengue IgG Antibody. The diagnosis was made without proper physical examination due to reports of Covid-19 and Dengue co-infection in Chandigarh during that time. Covid-19 was ruled out by a negative RT-PCR test the following day, and Typhoid fever was ruled out by a negative Widal test. The final diagnosis was confirmed as Dengue Haemorrhagic Fever. Refer Table 2 for investigations.

Table 1
Timeline of medical history.

Date and Month	Clinical events	Interventions and Results
September 20, 2020	6 month amenorrhoea	1. Dashamoolarishta 20 ml bd 2. Rajapravartini vati 2 bd 3. Erandamool kwath 50 ml bd after 4 days of medication, menstruation started, she stopped medicines
October 10, 2020	Mild fever and body pain	No medication
October 12, 2020	Menstrual bleeding associated with fever and body pain	No medication
October 14, 2020	Loss of appetite, abdominal pain, heavy bleeding, severe weakness	No medication
October 15, 2020	Early morning fever of 103 °F with above symptoms, mild headache, red coloured urine	Paracetamol 650 mg taken and fever subsided, taken to Hospital.

6. Therapeutic intervention

The patient was administered *Ayurvedic interventions* commonly used in viral fevers. *Sudarshana Ghana vati* was prescribed at a dosage of 2 tab thrice a day. Additionally, a combination of *Pippali* (1 part),*Giloy* (2 part) and *Sitopaladi churna* (5 part) with honey was given 12 gm in divided

Table 2
Blood reports and urine analysis of patient before and after treatment.

Blood values	Before Treatment(October 15, 2020)	After treatment (October 23, 2020)
Hb	14.6 gm/dl	14.6 gm/dl
Leucocyte Count	2500/cum	5600/cum
Neutrophils	45%	42%
Lymphocytes	44%	47%
Eosinophils	01%	01%
Monocytes	10%	10%
Basophils	0%	00
Platelet Count	0.92 lacs/cumm	2.33 lacs/cumm
RBC count	5.21 m/cumm	5.29 m/cumm
Absolute Eosinophils count	25/cumm	56/Cumm
ESR Wintrobes	19 mm/Hr	06 mm/Hr
Urine analysis	**Before treatment**	**After treatment**
Colour	Reddish	Pale yellow
Appearance	Turbid	S.Turbid
Reaction	Acidic	Acidic
Urine albumin	+	Nil
Sugar	Nil	Nil
Pus cells	4-5/hpf	6-8/hpf
R.B·C	40-45/hpf	1-2/hpf
Epithelial cells	2-3/hpf	8-10/hpf
Crystals	Nil	Nil
Other	Nil	Nil

Serology (October 15, 2020).
Dengue IgM –Positive, Dengue IgG – Positive, Dengue Antigen (NS1) –Positive.
Widal (October 15, 2020).
S.Typhi "O" - 1:80.
S.Typhi "H" - 1; 80.
S.Paratyphi "AH" −1:40.
S.Paratyphi "BH" −1:20.
Covid −19 (October 15, 2020) RT-PCR Method.
SARS COV-2 RNA – Negative.

doses at an interval of 3 hours. Water boiled with dry ginger and coriander was frequently advised to improve appetite and prevent dehydration. She was instructed to follow an easily digestible liquid diet consisting of Khichdi (made with rice and Moong dal), Daliya with salt, Moong Dal soup and fruits such as *Dadima* (Pome granate), *Draksha (Raisins)* according to appetite. The patient was advised to take proper rest. The parents were instructed to communicate the laboratory reports telephonically as soon as they were received. Dengue confirmation reports were received on the same evening, and tablet Caripill (Papaya leaf extract) was prescribed at a dosage of 1 tablet thrice a day. The parents were instructed to closely monitor the patient and update any changes in the patient's condition telephonically. (Table 3 - therapeutic interventions)

7. Follow up and Outcomes

On the second day, the patient reported relief from abdominal pain, nausea, and vaginal bleeding. There was no recurrence of fever after the patient started taking medication and gradual improvement in appetite was also reported by patient on the second day of *Ayurvedic* therapeutic intervention. On the third day, complaints such as body ache, pain in abdomen and headache eased, and the patient regained good appetite. The patient was advised to gradually transition to a normal diet pattern. The final follow-up was conducted at the hospital with blood reports after 1 week of treatment. During the follow-up visit, she remained stable except for mild weakness.

8. Intervention, adherence and tolerability

The patient took all medicines properly for first 3 days only. After experiencing relief from symptoms, she refused to take the medicated water and *churna* but continued with the tablets for 1 week.

9. Discussion

The case presented with menorrhagia and fever during the Covid −19 Pandemic in the Gynaecologic opd. At that time, reports in Chandigarh indicated a tendency of co-infection of Dengue and Covid-19. The patient had no history of Purpura, Epistaxis, Gum bleeding, or petechia which are the common presentations of DHF. Similarly, common symptoms of COVID19 like sore throat, dyspnoea and cough, were also absent in this case. The patient had initially visited the OPD 20 days prior with the complaints of amenorrhoea for six months and was a diagnosed case of PCOS with a history of irregular cycles. After taking *Ayurvedic* medications, the patient started menstruating, which lasted for 5 days without any abdominal pain. In this case, Dysfunctional Uterine Bleeding due to PCOS was also to be suspected if the Dengue reports were negative. This case underscores the importance of taking a thorough history of presenting complaints, which could guide the physician to arrive at a probable diagnosis if circumstances donot allow for a complete physical examination. On analysing the clinical course of dengue as per WHO, it can be seen that the patient visited the hospital during the late febrile phase with some of the warning signs like severe abdominal pain, lethargy, heavy menstrual bleeding, refusal of oral intake and restlessness. An acute onset of high grade fever is an early manifestation of both Dengue and Dengue haemorrhagic fever. The majority of dengue fever patients are able to fully recover after the febrile period, but some individuals directly enter the critical phase, presenting warning signs of severe abdominal pain, persistent vomiting, marked change in temperature, haemorrhagic manifestations, or change in mental status. The patients condition deteriorates at temperatures of 99.5 F–100.4 °F after which a drastic decrease in platelet count leads to leakage of plasma, subsequent shock, fluid accumulation with respiratory distress, critical bleeding, and organ impairment [6] The complaints presented by the patient were the *lakshanas* of *amavasta* of *jwara* like *Aruchi* (anorexia), *avipaka* (indigestion), *udaragurutwa* (heaviness of abdomen), *alasya* (laziness), *jwara* (fever), *lalapraseka* (nausea) *kshudnasha* (loss of appetite), *virasamugha* (tastelessness), *gatra gurutwa* (heaviness in body) and *glani* (weakness) [[5] Chapter 3, Verse 113-115] along with symptoms of *pittapradhana sannipatajwara* like *raktamutrata* (haematuria) and *balakshaya* (severe weakness). On assessing the signs and symptoms, the final diagnosis was made as *pitta pradhana sannipata jwara* at the stage of *amavastha*.

The initial approach followed here was *deepana, amapachana* and *raktapittaharana* there by controlling the progress of the disease. This was achieved by *Sitopaladi Churna, Pippali* and *Giloy* along with *Sudarshana Ghana vati*, Caripill tab. *Sitopaladi Churna* [7] was prescribed as it is indicated in *swasa, kasa, kaphapradhana* diseases, *Arochaka, alpagni* and *parswasoola*. *Sudarshana Ghana vati* [8] is *amapachana*, *soolahara*, *Sarva Jwarahara* and *tridoshahara*. *Sitopaladichurna* along with *Pippali* and *Guduchi* increases the *jatharagni* and *dhatwagni* due to the property of *deepana* and the toxic metabolites in the body are digested and removed by its *pachana* action. *Nighantu Adarsh* explains the use and properties of *Papaya* under the name *Erandakarkati* and is indicated in *kasa, swasa, yakrut, pleeha* and *udara roga*. It is beneficial in *mandagni* and *shotha* [9]. In thrombocytopenia conditions, the spleen and liver are the sites of accelerated platelet destruction. Acutely damaged platelets are detected and removed by splenic macrophages and liver kupffer cells. *Erandakarkati* is indicated in liver and spleen disorders, which indirectly hints of pharmacological action in bleeding disorders. Various studies have showed the efficacy of papaya leaf extract in managing low platelet count. So Caripill tab was selected for the prevention of further destruction of platelets. Vascular leakage is the major pathophysiological feature which determines dengue severity. The evidence of vascular leakage of proteins and liver damage is mostly associated with thrombocytopenia [10,11]. Therefore, thrombocytopenia along with warning signs of Dengue might be an important predictor of mortality. Recent researches on action of papaya leaf extract (PLE) on thrombocytopenia induced rats showed that PLE significantly decreases the expression of envelope and NS1 proteins in DENV infected THP-1 cells. PLE also helped to decrease the intracellular viral load, thereby a significant decrease in erythrocyte damage and hydrogen peroxide induced lipid peroxidation. The antioxidant and free radical scavenging property of PLE can help in the prevention of haemolysis and bleeding [12,13]. Evidences from various researches has established the antioxidant potential of *Sudarshana churna* and *Sitopaladi churna* also [14,15]. The simple dietary modifications like liquid diet and medicated warm water have helped in *agnideepana*, *amapachana* and *Jwarashamana,* along with medicines.This was confirmed by the improved appetite within 3 days of starting the medication. She also requested a change in the prescribed diet due to increased appetite and good taste perception. The frequent intake of medicated water boiled with dry Ginger and dry Coriander seeds helped in maintaining the fluid volume in the body and thus prevented dehydration. Ayurveda advocates the use of fruits like pomegranate and dry grapes for *Jwarashamana,* along with *lajasaktu*

Table 3
Treatment protocol.

S. No.	Medication	Dose and time of administration with *Anupana*	Duration of treatment
1	*Sudarshana Ghana Vati*	2 tab tds with warm water	10/05/2020-17/05/2020
2	*Sitopaladi Churna* – 5 part *Giloy churna*- 2 part *Pippali Churna*- 1 part	3 gm powder (½ tea spoon) with honey at 3 hour interval	May 10, 2020 -13/05/2020
3	[a]Water boiled with *Shunti* and *Coriander*	Frequent intake of luke warm water	May 10, 2020 -13/05/2020
4	[b]Caripill tab	1 tab tds	10/05/2020-May 17, 2020

[a] Medicated water preparation-1 litre water boiled with 5 gm Dry ginger and 5 gm Coriander.
[b] started after dengue confirmation.

[16].

10. Conclusion

To control disease severity and reduce dengue mortality through effective disease management, early diagnosis is crucial. In this case, the *Ayurvedic* treatment protocol successfully managed DHF without progressing to DSS. Simple *Ayurvedic* interventions, coupled with dietary modifications, facilitated the patient's early recovery from this potentially fatal disease. *Ayurveda* advocates dietary interventions alongside medicines for successful disease management.

Patient perspective

The patient and her family were satisfied with the cost- effective *Ayurvedic* treatment and were surprised to witness the effective management of heavy vaginal bleeding due to DHF within a short period of time, without any complications or hospital stay. The major symptoms were controlled within 3 days of medication, and within a week, she regained good health. The family expressed satisfaction with the treatment, and this incident has contributed to fostering a positive attitude towards the *Ayurvedic* system of medicine.

Informed consent

Patient and guardians had given informed consent for this case study.

Declaration of use of AI in the writing process

Authors have used Chatgpt version3.5 during the preparation of this work for language editing purposes only. After utilizing the tool , the authors thoroughly reviewed and edited the content as necessary and assumed full responsibility for the publication's content.

Source of funding

None.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

Dr. Laxmipriya Dei, Professor and HOD, Dept of Prasuti tantra and Streeroga, ITRA, Jamnagar.

Dr.Sumit Srivastava, Dean (Academics), SDACH, Chandigarh.

Patient and guardians for the cooperation and informed consent for this study.

References

[1] World Health Organization. Dengue haemorrhagic fever : diagnosis, treatment, prevention and control. second ed. World Health Organization; 1997.
[2] H Sellahewa K. Haematological Disturbances in dengue haemorrhagic fever - its Pathogenesis and management Perspectives. J Hematol Oncol Res 2015;3:15–24. https://doi.org/10.14302/issn.2372-6601.jhor-14-381.
[3] Comprehensive guidelines for prevention and control of dengue and dengue haemorrhagic fever, revised and expanded edition. WHO; 2011.
[4] Srikiatkhachorn A. Plasma leakage in dengue haemorrhagic fever. Thromb Haemostasis 2009;12:1042–9. https://doi.org/10.1160/th09-03-0208.
[5] Trikamji Yadavji, Charaka Samhita of Acharya Charaka, Sthana Chikitsa, Chikitsa Jwara, editors. Second Edition. Varanasi: Chaukhamba Orientalia; 2011. p. 406–7.
[6] Kalayanarooj S, Vaughn DW, Nimmannitya S, et al. Early clinical and laboratory Indicators of acute dengue illness. J Infect Dis 1997;176:313–21. https://doi.org/10.1086/514047.
[7] Trikamji Yadavji, Charaka Samhita of Acharya Charaka, Sthana Chikitsa, Chikitsa Rajayakshma, editors. Second Edition. Varanasi: Chaukhamba Orientalia; 2011. p. 464.
[8] Prabhakar Rao G, Sarangadhara Samhita of Sarangadharacharya, Khanda Madhyama, editors. Churnakalpana. First Edition. Varanasi: Chaukhamba Krishnadas Academy; 2013. p. 118.
[9] Bapalal Vaidya G, ed. Nighantu Adarsha, Pippalyadi Varga, *[Chapter 54]*. first ed. Varanasi: Chaukhamba Bharati Academy; 2013:613-617.
[10] Mourão MPG, Lacerda MVG, Macedo VO, Santos JB. Thrombocytopenia in patients with dengue virus infection in the Brazilian Amazon. Platelets 2007;18:605–12. https://doi.org/10.1080/09537100701426604.
[11] Srichaikul T, Nimmannitya S. Haematology in dengue and dengue haemorrhagic fever. Best Pract Res Clin Haematol 2000;13:261–76. https://doi.org/10.1053/beha.2000.0073.
[12] Sharma N, Mishra KP, Chanda S, et al. Evaluation of anti-dengue activity of Carica papaya aqueous leaf extract and its role in platelet augmentation. Arch Virol 2019; 164:1095–110. https://doi.org/10.1007/s00705-019-04179-z.
[13] Okoko T, Ere D. Reduction of hydrogen peroxide–induced erythrocyte damage by Carica papaya leaf extract. Asian Pac J Trop Biomed 2012;2:449–53. https://doi.org/10.1016/s2221-1691(12)60074-4.
[14] Wass Weerakoon, Perera PK, Gunasekera D, Suresh TS. Evaluation of the in vitro and in Vivo antioxidant potentials of Sudarshana Powder. Evid base Compl Alternative Med 2018:1–6. https://doi.org/10.1155/2018/6743862.
[15] Makhija IK, Aswatha Ram HN, Shreedhara CS, Vijay Kumar S, Devkar R. In vitro antioxidant studies of Sitopaladi Churna, a polyherbal Ayurvedic formulation. Free Radic Antioxidants 2011;2:37–41. https://doi.org/10.5530/ax.2011.2.8.
[16] Trikamji Yadavji, Charaka Samhita of Acharya Charaka, Sthana Chikitsa, Chikitsa Jwara, editors. Second Edition. Varanasi: Chaukhamba Orientalia; 2011. p. 411.