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RESEARCH ARTICLE

MANAGEMENT OF DENGUE FEVER THROUGH AYURVEDA: A SINGLE CASE STUDY

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ABSTRACT

Dengue is considered globally as the most concerning mosquito borne arboviral disease in terms of morbidity and mortality that places a significant socioeconomic and disease burden on many tropical and subtropical regions of the world. Till date, there is no specific treatment which is accepted for dengue fever in Modern Medicine. In *Ayurveda*, dengue fever can be correlated with *Visham Jwara*. Various formulations have been mentioned in *Jwara Prakaran* and also tried, scientifically validated and documented by modern researchers, showing evidence of efficacy. A case study of dengue fever was done which was successfully managed with *Ayurvedic* medications. The patient showed marked improvement in symptomatology along with hematological profile. So it was concluded that dengue fever can be managed without any side effect in *Ayurveda.*

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INTRODUCTION

Dengue is considered globally as the most concerning mosquito borne arboviral disease in terms of morbidity and mortality which is caused by one of four closely related virus serotypes of the genus flavivirus. It is the most widely distributed viral haemorrhagic fever in the world (Pinheiro, 2017), that places a significant socioeconomic and disease burden on many tropical and subtropical regions of the world. Although nearly half of the world's population is at risk for Dengue infection and as many as 50 to 100 million new cases are estimated to occur annually (Gubler, 2006). During the past five decades, the incidence of dengue has increased 30 folds (Lalla, 2014). Although the full global burden of disease is uncertain, the initiation of activities to record all dengue cases partly explains the sharp increase in the number of cases. Increase human population density, global climate change, urbanization, poor sanitation (creating breeding sites for larval mosquitoes), reinfestation (in 1970) of South America by A.aegypti after a successful eradication campaign and the movement of infected persons by airplanes have contributed to a substantial increase in dengue incidence during the past 50 years (Kuhn, 2002). Before 1970, only 9 countries had experienced severe dengue epidemics. The disease is now epidemic in more than 100 countries in WHO regions.

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Not only is the number of cases increasing as the disease spreads to new areas but explosive outbreaks are occurring. Year 2016 was characterized by large dengue outbreaks worldwide. In India, Delhi recorded its worst outbreak since 2006 with over 15000 cases in 2015 (http://www.who.int/mediacentre/factsheets/fs117/en/). Today the world is looking up to complimentary system of medicine like *Ayurveda* for the treatment of disorders including dengue as this challenging disease is currently unmet by licenced vaccines or specific therapeutic agents in Modern Medicine.

Case Report

A 36 yrs old male patient reported to *Kayachikitsa* OPD of Guru Nanak Ayurvedic Hospital, Gopalpur, Ludhiana, Punjab on 30th Oct. 2017, with the chief complaint of fever and generalized bodyaches. On enquiry, he revealed that he was quite asymptomatic till 27th Oct.2017 when he developed mild sore throat, bodyaches and loss of appetite. After 2 days, he got fever which was of high grade (104 degree F) and was associated with chills and severe headache. Other associated symptoms were generalized bodyaches and weakness, for which he took medication from a local medical store. Medication was not known to the patient but he got temporarily relief in the symptoms. So with this history, he came to the hospital. When enquired about past illness, there was no relevant history.

As he belongs to a labour class in brick kiln, his socioeconomic history revealed poor ventilation and hygienic standards. According to his personal history, appetite was very much reduced and was addicted to smoking (1 bundle per day). On examination, he was febrile (99.8 degree F.), had pulse rate of 92/minute, regular with good volume and blood pressure of 108/76 mm of Hg. In systemic examination, there was tenderness in epigastric region only. He was subjected to various routine laboratory investigations and was diagnosed as a case of dengue fever (Positive NS1 antigen and Ig test). Other Blood investigations revealed leucopenia (3800 cells/cumm) and thrombocytopenia (platelet count 63000 cells/cumm).

Management

He was admitted in IPD of the same department and was put on *Ayurvedic* line of treatment along with light diet and plenty of fluid intake. Hemogram was advised to repeat every day. After 5 days, there was remarkable improvement in the haematological profile of the patient which was also evident symptomatically without any complication.

Moderate3
Mild2
Occasional1
No bodyaches0

Hematological Profile:

TLCGrade

3000-3500 cells/cumm4
3500-4000 cells/cumm3
4000-4500 cells/cumm2
4500-5000 cells/cumm1
More than 5000 cells/cumm0

Platelet CountGrade

Less than 50,000 cells/cumm4
50,000-65000 cells/cumm3
65000-80000 cells/cumm2
80000-95,000 cells/cumm1
More than 95,000 cells/cumm 0

Table 1. Line of treatment given to the patient

S.No.	Drugs	Dose	How many times a day
1.	Churna		
	Nimba	2 gm.	
	Mustak	2 gm. Total 5 gm.	2
	Guduchi Satva	1 gm.	
2.	Swarasa		
	Tulsi		
	Erandakarkati patra (Papaya leaves)	20 ml. each- Total 60 ml.	4
	Ghritkumari		
3.	Tablet	250 mg.	3
	Tribhuvan kirti Rasa		

Table 2. Datewise symptoms with haematological profile of the patient

Date	Symptoms	Total Leucocyte Count	Platlet Count
30/10/2017	Fever, headache, generalized bodyaches, loss of appetite	3800 cells/cumm	63000 cells/cumm
31/10/2017	Diminution in the intensity of fever along with headache, Rest of the symptoms remained same	3600 cells/cumm	60,000 cells/cumm
1/11/2017	do	4300 cells/cumm	78000 cells/cumm
2/11/2017	Marked Reduction in frequency as well as intensity of fever, no headache	5100 cells/cumm	92000 cells/cumm
3/11/2017	Low grade fever (up to 99 degree F) with no headache, bodyaches markedly improved, appetite improved	6300 cells/cumm	1,14,000 cells/cumm

Assessment Criteria and Observations

FeverGrade]

High (102-104 degree F)4
Moderate (100-102 degree F)3
Low (99- 100 degree F)2
Very low (up to 99 degree F)1
No fever0

HeadacheGrade

Severe, requires medicine4
Moderate3
Mild2
Occasional1
No headache0

BodyachesGrade

Severe, hamper routine work4

Table 3. Effect of therapy (Based on grading)

S.No.	Characteristic	B.T.*	A.T.**
1.	Fever	4	1
2.	Headache	4	0
3.	Bodyaches	4	2
4.	TLC	3	0
5.	Platelet Count	3	0

(*- Before treatment, **-After treatment)

DISCUSSION

*Ayurved*a refers fever as *Jwara* in which body temperature goes beyond the normal temperature and is characterised by disturbance in normal functioning of the body as well as mind, mentioned in the texts as "*Manaso-Deha Santapa"*. Due to its *Bhootaabhishanga Nidana* (viral infestation) as well as *Visham Aarambh* (Fever- sudden onset or onset after nonspecific symptoms), *Visham Kriya* (fever with or without chills and rigors) and *Visham Kala* (irregular duration or interval of fever), it can be correlated with *Visham Jwara.*

***Samprapti* (Pathogenesis in Ayurveda)**

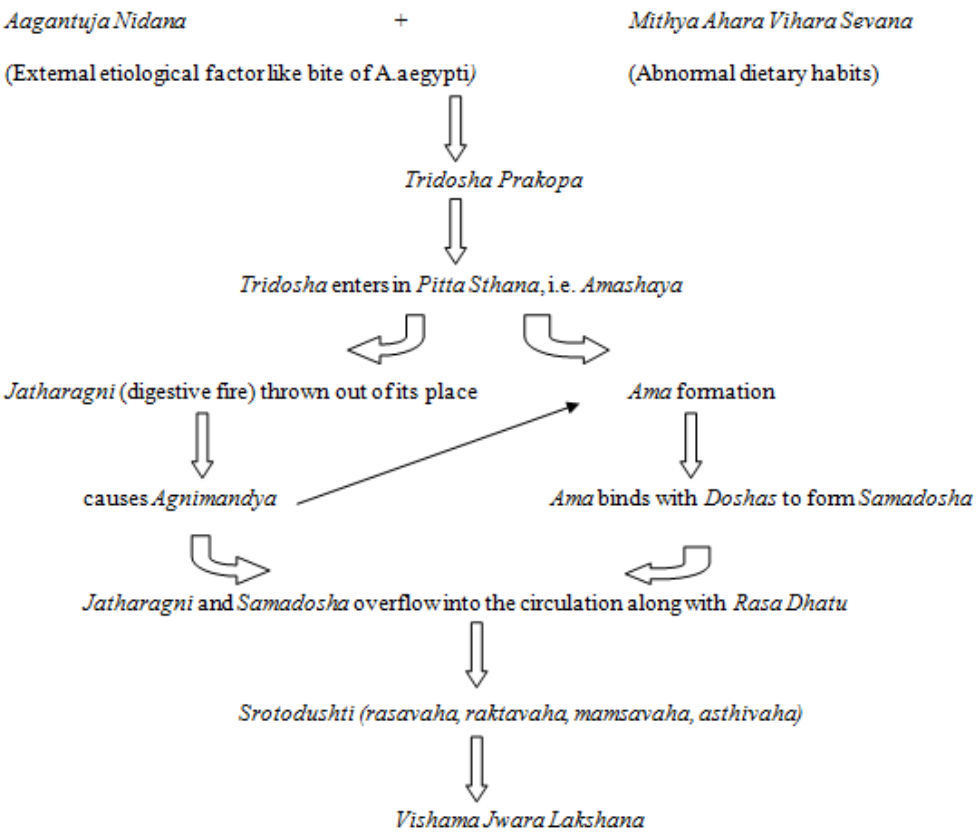

Table 4. Properties of Drugs used

Properties	*Nimba* (Azadirachta indica)	*Mustak* (Cyperus rotundus)	*Guduchi* (Tinospora cordifolia)	*Tulsi* (Ocimum sanctum)	*Ghritkumari* (Aloe barbendensis)	*Erandkarkati* (Carica papaya)
Rasa	Tikta	Katu Tikta	Tikta kashaya	Katu tikta	Tikta madhura	Katu tikta
Guna	Laghu		Laghu	Laghu ruksha	Guru	Laghu Ruksha
Virya	Sheeta	Sheeta	Ushna	Ushna	Sheeta	Ushna
Vipaka	Katu		Madhura			Katu
Karma	Agnikara, Pittakaphahara	Deepana pachana, jwarahara, kaphapittahara	Agnivardhaka, rasayana, tridhoshahara	Deepana	Rasayana	Pachana, Kapha vata shamaka

The main aim of *Chikitsa*, in *Ayurveda* is aimed towards *Vighatana* of *Vyadhi Samprapti* or *dosha dushya sammurchhana*. In general principle of *Ayurveda*, *nava jwara* (Acute fever) can be managed by[6]-

- *Langhana* (fasting or taking light diet)- maintains the metabolic fire.
- *Swedana* (sudation)- it eliminates the toxins or metabolic wastes out of body
- *Kala* (time waiting/patience)- helps in correcting the metabolism
- *Yavagu Sevan* (eating gruel)- improves digestion
- *Tikta Rasa Bheshajam* (use of herbs with bitter in taste)-Due to deepana guna, tikta rasa helps in ameliorating digestive fire.
- *Ama Pachana* (drugs which improve the abnormal metabolism).

As Dengue fever is an acute febrile illness so can be treated on the line of *Nava Jwara*.

These all drugs due to their *Tikta Rasa*, increases the digestive fire or *Agni* thereby corrects *Agnimandya* and *Samadosha* condition. *Nimba, Guduchi, Tulsi* and *Erandkarkati* have *Laghu Guna* along with *Ruksha Guna* of *Tulsi* and *Erandkarkati* which is just opposite to *Guru* and *Picchila Guna* of *Ama* (formed product due to abnormal digestion and metabolism). Both *Laghu* and *Ruksha* guna helps in alleviate symptoms of ama dosha. Other than this, *Erandkarkati* has *Pachan Guna* which clears *Ama* from *Samadosha*, making all *Doshas* in *Nirama* state. *Ghritkumari* and *Guduchi* both are termed as *Rasayana* in *Ayurveda* to combat the immunosuppressive condition. *Tribhuvan kirti rasa* (Vaidya Lakshmipati Sastri, 1997), which has been mentioned particularly in *Jwara Chikitsa Prakaran,* has *Ushna Virya* so effectively used in *Amaj* condition of *Jwara*. These formulations have also been tried, scientifically validated and documented by Modern researchers, showing evidence of efficacy. In a study, crude aqueous extract of *Neem* leaves and compound Azadirachtin were evaluated against replication of dengue virus type-2. Extract from *Neem* leaves showed significant inhibitory activity against dengue virus while pure Azadirachtin did not depict any inhibitory effect in both in

vitro and in vivo experiments (Parida, 2002). Similarly, C.papaya leaves have been traditionally used in the treatment of dengue fever. The aqueous extract of this plant exhibited potential activity against dengue fever by increasing platelet count, white blood cells and neutrophils (Ahmad, 2011). *Tulsi*, termed as Ocimum sanctum has suggested to possess antiviral, antimicrobial, diaphoretic and analgesic activity [10] thereby reducing the febrile condition along with symptoms of dengue fever.

Conclusion

It can be concluded from the case that the formulations exhibited marked therapeutic effect on febrile condition of dengue along with other associated symptoms. Other than this, the drugs also corrected leucopenia as well as thrombocytopenia within 5 days. No side effects were seen during the admission. But further study is needed to observe the effect of above formulation in other febrile conditions also and secondarily; the study should be done on more no. of patients and for longer duration to remark other benefits.

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