



RESEARCH ARTICLE

AN OBSERVATIONAL CLINICAL STUDY IN THE MANAGEMENT OF TYPHOID FEVER THROUGH SHAMANAUSHADHI

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ABSTRACT

Typhoid fever is an acute illness associated with fever that is most often caused by the *Salmonella typhi* bacteria. Once the bacteria is ingested it quickly multiplies within the stomach, liver or gall bladder and finally enters the blood stream causing symptoms like fever, headache etc. these cases as of 2010 caused about 190000 deaths up from 137000 in 1990 in whole world, India, Pakistan and Egypt are also known high risk area for developing this disease. A clinical study comprising of 15 patients of either sex attending OPD clinic of AMVH Hubli and presenting with clinical manifestation of Typhoid confirmed by Widal test were selected for observational study. All the patients were received Sanjivani vati 2 tab. bid with Kiratadisapta Kashaya (20 ml) twice daily after food. It was given for 21 days and follow up period was of 1 month with weekly visit. From the result obtained we can conclude that therapy with this Ayurvedic combination of drugs shown significant relief ($p < 0.001$) in symptoms after 21 days of treatment.

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INTRODUCTION

Typhoid, also known as enteric fever is a life threatening disease that is caused due to an infection by the bacterium *Salmonella typhi*. According to the CDC (Center for Disease Control) almost 21.5 million people in developing countries contract typhoid each year. In 2000, it was estimated that over 2.16 million episodes of Typhoid occurred worldwide, resulting in 2,16,000 deaths, and that more than 90% of this morbidity and mortality occurred in Asia. India, Pakistan, and Egypt are also known high-risk areas for developing this disease. Air pollution, Water pollution, and Soil Pollution are also responsible for many Bacterial Diseases. Typhoid fever is one amongst these diseases which is mostly attributed to polluted water. The bacterium that causes Typhoid fever may be spread through poor hygiene habits and public sanitation conditions, food or water contaminated with the fecal materials of an infected person and sometimes also by flying insects feeding on feces. Public education campaigns encouraging people to wash their hands after defecating and before handling food are an important component in controlling spread of the disease. The bacterium *Salmonella typhi* is present only in human beings and is transmitted through contaminated food or water. People with this infection carry the bacterium in their

intestines and bloodstream, and those who have recovered from the disease could still have the bacterium in their system; they are known as 'carriers' of the disease. Both ill people and carriers shed *Salmonella typhi* in their stool. Infection is usually spread when food or water is handled by a person who is shedding the bacterium or if sewage water leaks into drinking water food that is then consumed. Once the bacterium is ingested it quickly multiplies within the stomach, liver or gallbladder and finally enters the blood stream causing symptoms like fever, rashes (flat, rose-colored spots), vomiting, loss of appetite, headaches, general fatigue. In severe cases one may suffer from intestinal perforations or internal bleeding, diarrhea or constipation. One of the characteristic symptoms of typhoid is a 'step ladder fever'. Typhoid fever is treated with antibiotics. Resistance to multiple antibiotics is increasing among *Salmonella* that cause typhoid fever. Reduced susceptibility to *Fluoroquinolones* (e.g., ciprofloxacin) and the emergence of multidrug-resistance has complicated treatment of infections. Recently, it has been demonstrated that many human pathogenic bacteria have developed resistance against several synthetic drugs. There are several reports on antimicrobial activity of crude extracts prepared from plants that inhibit various bacterial pathogens, but a limited numbers of in vitro studies on herbal preparations have been published. It is need of the hour to identify antibacterial potential of herbal products based on diseases for which no medicine or only palliative therapy is available. Hence an attempt was made to screen the antibacterial

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potential of herbal preparations in the control and prevention of enteric bacterial infection. The above said Typhoid symptomatology resembles to many of the condition explained in the Ayurveda such as *PittolavanaSannipataja Jwara* (Agnivesha et al., 1985), *Vishama Jwara* (Agnivesha et al., 1985) etc. as many symptoms like *Sirahgshoola*, *Antaradaha and Bahirdaha*, *gaurava*, *Sweda*, *Nabhiparshwapeeda*, *Vitsanga*, *Atisara*, *Antragatarakstrava*, *gatre cha bindworakte*, are similar to that of Typhoid fever.

Aims and objectives

1. To study enteric fever / Typhoid fever in modern and Ayurvedic perspective.
2. To assess the efficacy of *Sudarshana Ghana Vati* with *Patoladi Kashaya*.

MATERIALS AND METHODS

The following materials were used in the Clinical Trial.

- 1) Sudarshan Ghan Vati. (Ayurvedic formulary of India, 2011)
- 2) Patoladi Kashaya. (Shastri Ambikadatta and Bhesyajya Ratnavali, 2005)

Study Design

Sample size

A minimum of 15 subjects diagnosed as *Typhoid* fever and fulfill the inclusion criteria were selected incidentally and advocated for combination treatment for the study.

Source of data

Subjects attended the OPD and IPD of Post Graduate Department of Kayachikitsa, Ayurveda Mahavidyalaya and Hospital, Hubli, were taken as per the assessment criteria.

Methods of collection of data

- a) Subjects attending OPD and IPD of Post Graduate Department of Kayachikitsa, Ayurveda Mahavidyalaya & Hospital Hubli were made and Subjects fulfilling the criteria of diagnosis as per the proforma were selected for the study.
- b) Review of literature was collected from Post Graduate Library, Department of Kayachikitsa A.M.V.& Hospital, Hubli, and from Authentic Research Journals, Websites, Digital Publications etc.
- c) The drugs required for the clinical study were procured and prepared in the department of Rasa Shastra and Bhaishajya Kalpana, Ayurveda Mahavidyalaya, Hubli.
- d) The data which were obtained by the clinical trials were statistically analysed by applying 't'test.

Inclusion criteria

1. Subjects of age between 20 years to 50 year of age of either sex.
2. Subjects having history of fever with mild to moderate degree.
3. Subjects having clinical feature of Typhoid fever.

4. Subjects having Widal test positive.

Exclusion Criteria

1. Subjects below 20 years and more than 50 years.
2. Subjects having temperature more than 101⁰F.
3. Subjects having fever due other cause with Widal positive.

Withdrawal Criteria

1. If the patients having clinical feature would aggravated into secondary infection.
2. If the patient is irregular in the decided course of treatment.

Interventions

1. Subjects were given *Sudarshana Ghana Vati*, with *Patoladi Kashaya Churna*; the subjects were advised to boil 20 gms. of Kasahya Churna in 80 ml of water and reduce to 20 ml. They were asked to take 20 ml twice daily after food.

Pathya Ahara and Vihara were advised to the Subjects

- Duration: 21 days.
- Follow up: 1 month with weekly visit.

Assessment Criteria

1. Subjective parameter

Fever
Red rashes over neck (Rose spot)
Headache
Sweating
Abdominal Pain
Constipation or Diarrhoea
Coated tongue (V tongue)

2. Objective parameter

Widal test positive

Gradation of Clinical feature

1. Headache

Severe- 3 (Uncontrolled headache)
Moderate- 2 (Occasional headache)
Mild- 1 (Can be tolerated without medication)
Nil- 0 (No headache)

2. Fever

High grade -3 (>102° F)
Moderate -2 (99.6° F- 102° F)
Low grade -1 (97.6° F- 99.6° F)
Nil -0 (<97.6° F)

3. Colic Pain

Severe- 3 (Continuous)
Moderate- 2 (Intermittent)

Mild- 1 (Dull ache)
 Nil- 0 (No pain)

4.Constipation

Severe- 3 (Passing scanty stool after prolonged straining)
 Moderate- 2 (Passing stool on straining)
 Mild- 1 (Occasionally hard stool)
 Nil- 0 (No constipation)

5.Diarrhea

Severe-3 (Watery stool passing 4-5 times in a day)
 Moderate-2 (Watery stool passing 2-3 times in a day)
 Mild- 1 (Watery stool passing once in a day)
 Nil-0 (No watery stool)

6.Sweating

Nil- 0 (Sweating absent)
 Mild-1 (Sweating at the time of fever)
 Moderate-2 (Continuous sweating)
 Severe- 3 (Profuse sweating)

7.Rose spot

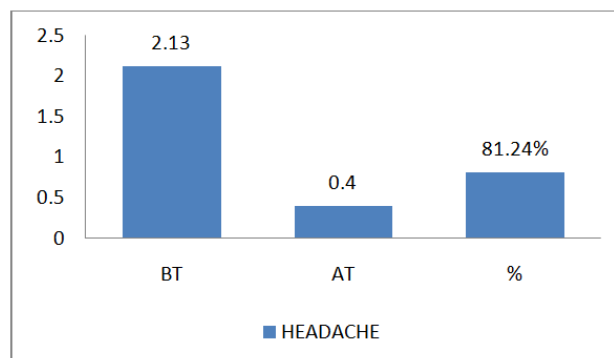
Nil- 0 (No Spot)
 Mild- 1 (0-5)
 Moderate- 2(6-15)
 Severe- 3(>15)

8.Coated Tongue

Nil- 0 (Normal)
 Mild-1 (Coated at middle)
 Moderate-2 (Partially Coated)
 Severe- 3 (Fully coated)

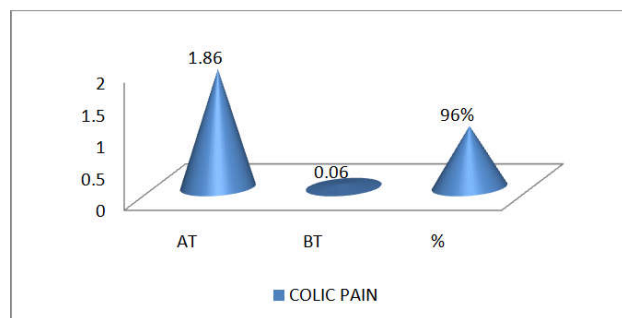
Headache

15 subjects presented with this symptom the mean value of BT and AT was 2.13 and 0.40 respectively which provide 81.24% relief which is statistically highly significant at $t=6.30$ and $p<0.001$.



Colic pain

15 subjects presented with this symptom the mean value of BT and AT was 1.86 and 0.06 respectively which provide 96.47% relief which is statistically highly significant at $t=9.31$ and $p<0.001$.



Statistical Analysis

LAKSHANA	BT	AT	X	%	SD	SE	t	P	REMARK
Headache	2.133	0.400	1.73	81.24%	1.62	0.274	6.30	<0.0001	HS
Fever	1.86	0.06	1.80	96.47%	0.75	0.193	9.31	<0.0001	HS
Colic pain	1.73	0.00	1.73	100%	0.75	0.19	8.96	<0.0001	HS
Constipation	1.6	0.00	1.6	100%	0.71	0.18	8.74	<0.0001	HS
Sweating	1.33	0.00	1.33	100%	0.69	0.18	7.36	<0.0001	HS
Rose spot	1.20	0.00	1.2	100%	0.83	0.21	5.61	<0.0001	HS
Coated tongue	2.33	0.06	2.264	97.16%	0.57	0.15	15.27	<0.0001	HS
Widal test	2.26	0.80	1.46	64.60%	0.62	0.161	9.13	<0.0001	HS

9.Widal test

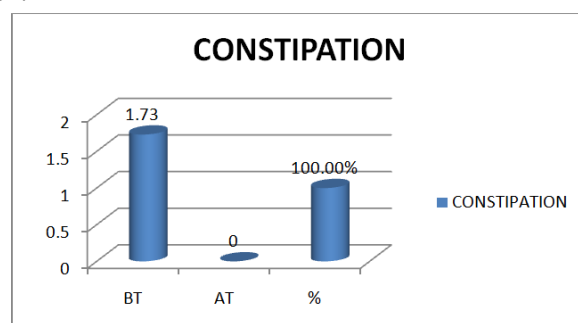
Ratio-1:320 - 3
 Ratio- 1:160 - 2
 Ratio-1:80 - 1
 Ratio- 1: 40 -0

OBSERVATION AND RESULTS

Effect of therapy on Subjective and Objective parameters such as Headache, Fever, Sweating, Constipation, Colic pain, Rose spot, Coated tongue and Widal test were assessed and obtained results were Statistically analyzed by applying student 't' test. In this present clinical study 15 subjects were registered based on the inclusion criteria.

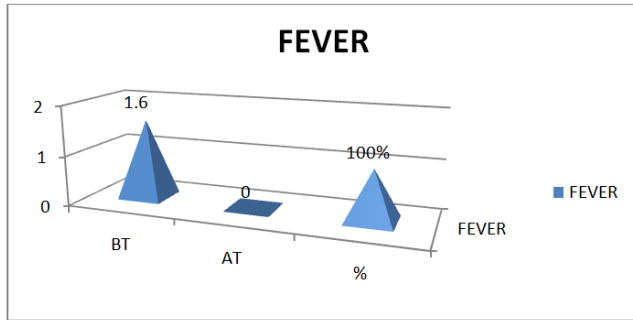
Constipation

15 subjects presented with this symptom the mean value of BT and AT was 1.73 and 0.00 respectively which provide 100% relief which is statistically highly significant at $t=8.96$ and $p<0.001$.



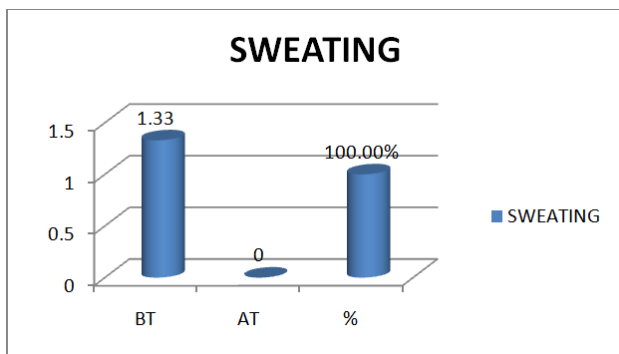
Fever

15 subjects presented with this symptom/sign the mean value of BT and AT was 1.6 and 0.00 respectively which provide 100 % relief which is statistically highly significant at $t=8.74$ and $p<0.001$.



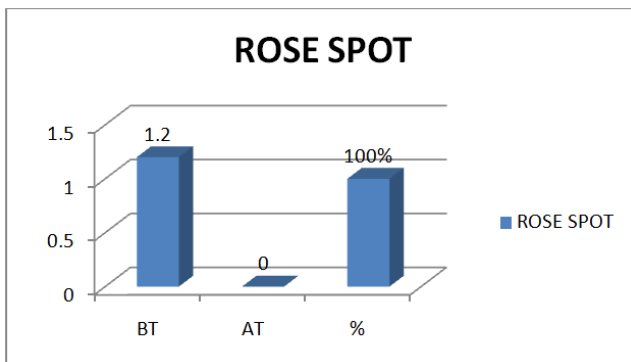
Sweating

10 subjects presented with this symptom the mean value of BT and AT was 1.33 and 0.00 respectively which provide 100 % relief which is statistically highly significant at $t=7.36$ and $p<0.001$.



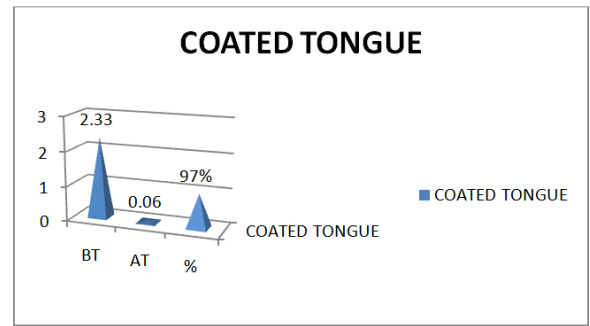
Rose spot

10 subjects presented with this symptom/sign the mean value of BT and AT was 1.20 and 0.00 respectively which provide 100 % relief which is statistically highly significant at $t=5.61$ and $p<0.001$.



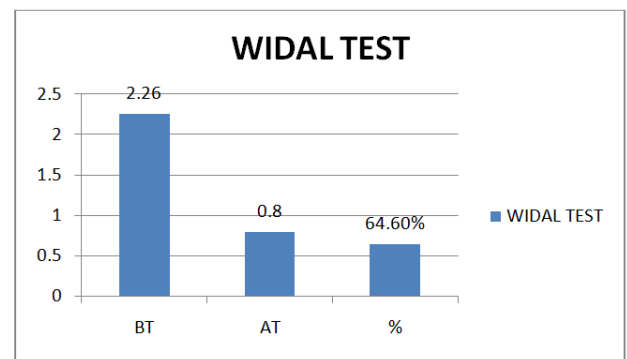
Coated tongue

10 subjects presented with this sign the mean value of BT and AT was 2.33 and 0.06 respectively which provide 97.16 % relief which is statistically highly significant at $t=15.27$ and $p<0.001$.



Widal test

10 subjects presented with this test the mean value of BT and AT was 2.26 and 0.80 respectively which provide 64.60 % relief which is statistically highly significant at $t=9.13$ and $p<0.001$.



DISCUSSION

Plenty of disorders have been found referred in the ancient Vedic literature either directly naming the disease itself or by hinting the nature of disorder. Typhoid fever symptomatically resembles many of the conditions explained in classical texts such as Pittaaulbana Sannipataja Jwara, Visham Jwara etc. The nidanas which are explained for Janapadodhwansa (Dooshita jala, Dooshita anna) are considered to be the main nidaanas of Pittaaulbana Sannipataja Jwara which are very similar to the causative factors of Typhoid fever in modern. As the symptoms of Typhoid fever are Fever, Headache, Abdominal disturbances, Red rashes etc. are due to the bacteria Salmonella typhi and Salmonella paratyphi. To treat the disease we should have the drugs which are Amapachaka, Shoolaprasamana, Tridoshahara, Srotoshodhaka, Swedajanana, Krimighna and Jwaraghna. These properties are found in Sudarshan Ghana Vati, and Patoladi Kashaya which are Katu, Tikta, Kashaya, Laghu, Teekshana Guna and all the above said properties.

Probable mode of action of Sudarshana Ghana Vati

Kirata Tikta is taken equal to all the above herbs in it. So Chiraita (Swertia chirata) is the main herb. It has capacity to even treat fever associated with symptoms as Dyspepsia, Fatigue, Diarrhoea, Headache etc. It is Tikta pradhan in nature and it has been used in Ayurveda for a long time as Krimihara and Jwarahara. Unlike most other medicines of this class, it does not constipate the bowels but tends to produce a mild laxative effect. It promotes the flow of bile. It balances all the three doshas (Vata, Pitta, and Kapha) and build strong against allergens and infections. It stimulates the liver, promotes blood detoxification and tons up the digestive system. The Parpataka

and Kusta are such herbs embedded with the Raktadoshahara property. Apart from these the main function which is impaired at the Jwara is temperature rise is a factor associated with the Twacha. Thus the action over Twak is substantiated here. Shunti is Kapha hara, Amavatahara, Hrudrogahara, Grahi and Panduhara. Guduchi is Jwarahara, Mootrakruchrhara, Hrudrogahara, Tridoshahara, Deepaka, Sangrahi, Rasayana, Panduhara, Kamalahara, Chardihara and Amahara. Out of these herbs the common is panduharatwatam. The destruction of the Rakta leads to pandu in Typhoid and there by hepatosplenomegaly is appeared. To reduce organomegaly the Guduchi and Shunti are used. A Dravya, which is a Yogavahi in the composition (Pippali) makes the bioavailability of the drug to deep tissues faster and faster. Thus the association of the Pippali makes that the drug acts faster in Typhoid and by its Rechaka property pacifies the Pitta, which is a dominant Dosha in the pathogenesis of Typhoid. The essential oil of Kustha has antibacterial effect in vitro (1 in 10,000 dilution). It also has antibacterial effects against Salmonella, Streptococci and Staphylococci. Sudarshan ghan vati helps to achieve Tridosha balance. (Sameer Malhotra and Amritpal Singh, 2003)

Probable mode of action of Patoladi Kashaya

It contains Patola, Indrayava, Dhanyaka and Yastmadhu. Combined rasa of drugs are Tikta, Kashaya, Madhura and Katu which are Tridoshashamaka especially Pittashamaka. Rochana, Deepana, Pachana, Rechana, Krimighna, Jwaraghna, Vishaghna property are present in all the ingredients. Glycyrrhiza glabra is a versatile medicine in India and China, for gastrointestinal health. It is a mild laxative, which soothes and tones the mucous membranes and relieves muscle spasms. Clinical studies have proved that the Glycyrrhiza glabra extracts to be more effective as well known synthetic alternatives. It is rich in flavonoids and is currently investigated as an antioxidant and certain immune functions such as interferon production. Its mode of action is as an antispasmodic, antipyretic and anti inflammatory action. (Sheetal Vispute and Ashlesha Khopade, 2011)

DISCUSSION ON RESULTS

The trial drugs due to their Deepana, Pachana, Anulomana, Krimighna and Swedajanana property increases the jatharagni and helped to reduce the ama which is the main cause for Fever. It facilitates the Malapravratana and Swedajanana which reduces the temperature of the body. Due

to Krimighna property of the combination of the drugs it kills the microscopic and macroscopic krimi in the body which are the causative organism of the fever in Typhoid fever. Both the groups showed almost same results which are statistically highly significant in all the subjective and objective parameters.

Conclusion

- After sustained theory and systematic clinical work following conclusions are drawn.
- Typhoid, a commonly seen condition, has been explained in our classics under different headings.
- The incidence of Typhoid is found to be more in people taking food from outside.
- Majority of hypertensive patients had Headache, Fever, colic pain, constipation/diarrhea, as common complaints.
- It can be said with full confidence that Typhoid can efficiently and effectively be managed with Ayurvedic drugs along with the life style modification, habits and food habits in accordance with the principles told in Ayurveda and the complications be prevented.

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