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Research Article

A COMPARATIVE CLINICAL TRIAL EVALUATING THE IMMEDIATE EFFECT OF ABHYANGA SWEDA AND DHUMAPANA IN TAMAKA SHWASA (BRONCHIAL ASTHMA)

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ABSTRACT

Objective of the study is to evaluate and compare the immediate role of abhyanga sweda and haridra dhumapana in the disease tamaka shwasa. Tamaka Shwasa, a disease of the pranavaha srotas due to its periodicity and severity is one among the life threatening disorders. The management during the attacks is an important principle of treatment in this disease. Among the many treatment measures mentioned for shwasa, lavana taila abhyanga along with nadi sweda and haridra dhumapana were selected in this study. This study is a two group comparative clinical pre-test and post-test design where the patients were evaluated before and after treatment on 4th day. Therapeutic effect was observed using the subjective and the objective criteria which were graded and analysed statistically using the 't' test. Moderate remission of the symptoms of tamaka shwasa was noticed in almost all patients in this study. The response by the treatment was statistically significant in terms of all the symptoms of the disease in both the groups except for the symptom dyspnoea in group A which showed that both treatments help as an immediate line of treatment. Comparing between the two groups the result was statistically significant in all parameters except in PEFR and laboured breathing and the effect was better in group B.

Keywords: Tamaka shwasa, Abyanga sweda, Haridra dhumapana, Bronchial asthma.

INTRODUCTION

Tamaka Shwasa is produced due to the vitiation of Vata and Kapha dosha afflicting the Pranavaha srotas. The Vata and Kapha dosha characteristically origin from the Pitta sthana and afflict the Rasa dhatu¹. The morbid dosha then localizes in the Pranavaha srotas and obstructs the free passage of Prana vayu leading to Prana vilomata and the resultant symptoms of Tamaka Shwasa. Asthma is a heterogeneous disease with interplay between endogenous and environmental factors. Genetic predisposition is proved by the familial association. Atopy, airway hyper responsiveness, gender and ethnicity working together with the environmental factors like hygiene hypothesis, indoor, outdoor allergens, occupational sensitizers, smoking, respiratory infections and obesity favours the disease manifestation. Allergens, infections, exercise, cold dry air, smoke, perfumes, dust, drugs, chemicals, stress and irritants are identified as triggering factors to the disease². Asthmatic patients harbour a unique type of inflammation in the airways that makes them more responsive than non-asthmatics to a wide range of triggers, leading to excessive narrowing with consequent reduced airflow and symptomatic wheeze and dyspnoea. The inhalation of an allergen in a sensitized atopic asthmatic patient results in a two phase bronchoconstrictor response. The inhaled allergen rapidly interacts with mast cells through the IgE dependant mechanism, resulting in the release of mediators such as histamine and leukotrienes leading to broncho constriction, mucosal oedema, vascular congestion and luminal exudates leading to the occlusion. In persistent type a chronic inflammatory response ensues, characterized by influx of inflammatory cells, transformation of airway cells and secretion of an array of cytokines, chemokines and growth factors. In short i) activation of T-helper 2 lymphocytes, ii)

recruitment of mast cells (IL-4 and IL-6), maturation and priming of lymphocytes (IL-5 and GM-CSF) iii) release of mediators iv) smooth muscle contraction, bronchial oedema and mucus plugging occurs leading to acute asthma and when episodes recur damage is irreversible. These result in reduction of lung function tests. In more severe asthma due to reduced ventilation and increased pulmonary blood flow bronchial hyperaemia results³. Incidence is increasing due to urbanization with 10-12 % adults and 15 % of children affected. In childhood males are affected twice as females, but in adulthood sex ratio gets equalized. Globally 300 million people are affected by this disease and this is expected to increase to 400 million by 2025. In many countries the prevalence is increasing, particularly in the second decade of life where this disease affects 10-15 % of population⁴. Considering geographical variation, asthma is more common in developed countries, being rarer in far eastern countries. Long term follow up in developing countries suggest that it is becoming more frequent as individuals are getting more westernized. The effective line of treatment for Tamaka Shwasa varies according to the stage of the disease. Establishment of the homeostasis with regard to the Dosha, Dushya and Srotas forms the rational treatment. Shamana, Shodhana, Brihmana, Rasayana are the therapeutic procedures employed in Tamaka Shwasa planned in accordance with the stage of the disease, severity and doshas⁵. The disease has been explained to be severely afflicting the population which is revealed by the words like ghora, ashu pranahara and durjaya⁶. When explaining the chikitsa of diseases like kasa shwasa etc., bleshaja kala has been referred as muhu muhu⁷ as immediate help is needed in such diseases as a vegakaleena chikitsa. Thus in this study abhyanga sweda and haridra dhuma pana were selected to observe the effect in relieving the attacks of asthma.

MATERIALS AND METHODS

Objectives of study

- Assessment of the therapeutic efficacy of Snigdha nadi sweda on chest and back in patients of Tamaka Shwasa.
- To evaluate the therapeutic effect of Haridra Dhumapana in patients of Tamaka Shwasa.
- Comparing the immediate effect of treatment with abhyanga sweda and dhumapana in tamaka shwasa.

Source of data

Sample source

Patients suffering from Tamaka Shwasa were registered from OPD and IPD of S D M Ayurveda Hospital, Udupi, India and taken for study.

Methods of collection of data

Study Design

Pre-test post-test comparative clinical study

Sample Size

60 patients suffering from Tamaka Shwasa were randomly divided into two groups of 30 patients each; by the method of Permuted block randomisation considering the whole sample size as the block, for the study.

Selection criteria

Patients fulfilling the diagnostic and inclusion criteria of Tamaka shwasa of either sex, irrespective of their economic status, Educational status, Caste were selected for the study.

Diagnostic Criteria

Patients having cardinal features of Tamaka Shwasa i.e., Shwasa, Kasa, Steevana and ghurghuraka shwasa fitting into the diagnostic criteria fixed by the GINA guidelines⁹ were selected. Ethical clearance - Institutional ethical clearance number: SDMCAU/ACA15/EC27/09-10⁸

Inclusion Criteria

- Patients fulfilling diagnostic criteria.
- Age group between 16 – 70 years.
- Patients having history more than 6 months.
- Patients fit for dhumapana
- Patients in whom Ekanga sweda is indicated

Exclusion Criteria

- Tamaka Shwasa associated with complications like emphysema, cor pulmonale.
- Severe attack of Tamaka Shwasa having the peak flow expiratory rate of < 50 % of predicted value as referred in the peak flow rate chart¹⁰.
- Suffering from other systemic disorders which would interfere with the studies.

Intervention

Group A: 30 patients were given Lavana Taila Abhyanga and Naadi sweda for 15 minutes each, once a day for 4 days.

Group B: 30 patients were treated with Haridra Dhumapana 3 puffs once a day for 4 days.

Study duration: 4 days

Assessment criteria

All the data were collected and documented on a detailed case proforma. Assessment of the condition was done adapting standard methods of scoring; Subjective and objective parameters were analyzed

Subjective and Objective Parameters

Were assessed before treatment and on 4th day of treatment

- 01 - Dyspnoea
- 02 - Cough
- 03 - Sputum
- 04- Peak Respiratory flow rate
- 05 - Laboured breathing
- 06 - Chest expansion
- 07- Asthma control questionnaire (ACQ)
- 08 - Breath sounds

Statistical test

The analysis of statistical significance using paired 't' test was applied on the results of each group and the comparison of the therapeutic effects between the groups and their statistical significance was analysed by the method of One way variance Anova test.

RESULTS

Out of 60 patients taken for the study, 30 each were allotted into group of abhyanga sweda and dhumapana. Paired 't' test was used to compare the BT and AT results of the individual group and unpaired 't' was used to compare the results in between the different treatment groups. The parameters of assessment Dyspnoea, Cough, Sputum, Laboured breathing, Breath sounds, Peak Respiratory flow rate, ACQ and Chest expansion were taken for statistical analysis. The changes are detailed in the tables and figures. Within the group comparison: The objective and subjective criteria's of the disease tamaka shwasa were recorded before the treatment and later on the fourth day of treatment. Effect on cough, sputum, Peak expiratory flow rate (PEFR), laboured breathing, chest expansion, ACQ and breath sounds in patients of Tamaka Shwasa on 4th day in group A and B shows a statistically significant response. In group A the change that occurred with the treatment in dyspnoea is not great enough to exclude the possibility that the difference is due to chance ($P = 0.057$) where as in B the result is significant. Between the group comparison: The differences in the mean values of Cough, ACQ, sputum, chest expansion, dyspnoea and breath sounds among the treatment groups are greater than would be expected by chance; there is a statistically significant difference ($P < 0.001$). The differences in the mean values of PEFR and laboured breathing among the treatment groups are not statistically significant. Overall effect: Among the 60 patients who completed the full course of treatment, the patients had good response in the symptoms in terms of percentage as shown in the table. Among the 60 patients in this study, the overall response in all the symptoms in individual groups showed 23.738 % in group B and 15.163 % in group A.

Table 1: Grading for symptoms and overall assessment

S. No.	Symptom	Parameters	Grades
1	Shortness of breath	Can walk indefinitely	0
		Short breath by strenuous work	1
		Short breath by Moderate work (by climbing 2 stairs)	2
		Short breath by minimum work (by climbing 1 stair)	3
		Shortness of breath at rest	4
2	Cough	No cough	0
		Occasional cough but not disturbing	1
		Cough troublesome during attacks	2
		Cough very troublesome and Frequent	3
3	Quantity of Sputum	Nil	0
		Less than 2.5 ml per day	1
		Ranging from 2.5 ml to 10 ml	2
		Ranging from 11 ml to 20 ml	3
		More than 21 ml per day	4
4	Use of Accessory muscle	None	0
		Mild occasional use	1
		Moderate continuous use	2
		Marked excess usage	3
5	Chest Expansion	5-8 cm	0
		4-4.9 cm	1
		3-3.9 cm	2
		2-2.9 cm	3
		< 2 cm	4
6	Breath Sounds	None	0
		End Expiratory	1
		Expiratory	2
		Both	3

Table 2: Effect on dyspnoea in patients of Tamaka Shwasa on 4th day in the two groups

Dyspnoea	Mean (S.E ±)		Difference in Mean	Paired 't' Test			
	BT	AT4		S.D.	S.E.M.	't'	P
Group A N = 30	2.400 ± 0.132	2.233 ± 0.124	0.167	0.461	0.0842	1.980	= 0.057
Group B N = 30	2.500 ± 0.157	1.933 ± 0.106	0.567	0.504	0.0920	6.158	< 0.001

Table 3: Effect on cough in patients of Tamaka Shwasa on 4th day in the two groups

Cough	Mean (S.E ±)		Difference in Mean	Paired 't' Test			
	BT	AT4		S.D.	S.E.M.	't'	P
Group A N = 30	2.567 ± 0.104	1.667 ± 0.111	0.900	0.305	0.0557	16.155	< 0.001
Group B N = 30	2.600 ± 0.103	2.167 ± 0.118	0.433	0.504	0.0920	4.709	< 0.001

Table 4: Effect on sputum in patients of Tamaka Shwasa on 4th day in the two groups

Sputum	Mean (± S.E)		Difference in Mean	Paired 't' Test			
	BT	AT4		S.D.	S.E.M.	't'	P
Group A N = 30	2.700 ± 0.180	2.533 ± 0.157	0.167	0.379	0.0692	2.408	= 0.023
Group B N = 30	2.700 ± 0.174	1.900 ± 0.139	0.800	0.664	0.121	6.595	< 0.001

Table 5: Effect on Peak expiratory flow rate (PEFR) in patients of Tamaka Shwasa on 4th day in the two groups

PEF	Mean (± S.E)		Difference in Mean	Paired 't' Test			
	BT	AT4		S.D.	S.E.M.	't'	P
Group A N = 30	301.000 ± 9.449	306.000 ± 9.238	-5.000	6.513	1.189	-4.205	< 0.001
Group B N = 30	299.000 ± 10.050	302.667 ± 10.205	-3.667	4.365	0.797	-4.600	< 0.001

Table 6: Effect on laboured breathing in patients of Tamaka Shwasa on 4th day in the two groups

Laboured Breathing	Mean (± S.E)		Difference in Mean	Paired 't' Test			
	BT	AT4		S.D.	S.E.M.	't'	P
Group A N = 30	1.700 ± 0.128	1.467 ± 0.115	0.233	0.430	0.0785	2.971	= 0.006
Group B N = 30	1.800 ± 0.155	1.300 ± 0.109	0.500	0.731	0.133	3.746	< 0.001

Table 7: Effect on chest expansion in patients of Tamaka Shwasa on 4th day in the two groups

Chest Expansion	Mean (± S.E)		Difference in Mean	Paired 't' Test			
	BT	AT4		S.D.	S.E.M.	't'	P
Group A N = 30	1.967 ± 0.112	1.567 ± 0.0920	0.400	0.498	0.0910	4.397	< 0.001
Group B N = 30	2.433 ± 0.157	1.600 ± 0.141	0.833	0.834	0.152	5.473	< 0.001

Table 8: Effect on Asthma control questionnaire (ACQ) in patients of Tamaka Shwasa on 4th day in the two groups

ACQ	Mean (S.E ±)		Difference in Mean	Paired 't' Test			
	BT	AT4		S.D.	S.E.M.	't'	P
Group A N = 30	11.933 ± 0.325	8.867 ± 0.278	3.067	1.337	0.244	12.560	< 0.001
Group B N = 30	12.333 ± 0.323	8.033 ± 0.370	4.300	1.950	0.356	12.076	< 0.001

Table 9: Effect on breath sounds in patients of Tamaka Shwasa on 4th day in the two groups

Breath Sounds	Mean (± S.E)		Difference in Mean	Paired 't' Test			
	BT	AT4		S.D.	S.E.M.	't'	P
Group A N = 30	2.533 ± 0.104	2.233 ± 0.0920	0.300	0.466	0.0851	3.525	= 0.001
Group B N = 30	2.633 ± 0.0895	2.033 ± 0.112	0.600	0.498	0.0910	6.595	< 0.001

Table 10: The Overall effect of treatment in all groups with respect to individual symptoms

Symptom	Group A	Group B
Dyspnoea	6.9 %	22.7 %
ACQ	25.7 %	34.9 %
Cough	35.1 %	16.7 %
L. breathing	13.7 %	27.8 %
C. expansion	20.3 %	34.2 %
Sputum	6.2 %	29.6 %
PEFR	1.6 %	1.2 %
B. sounds	11.8 %	22.8 %
Total	121.30 %	189.9 %
Average	15.163 %	23.738

Table 11: The statistical analysis of the two groups on the 4th day

Parameter	N	T	P	Significance
Dyspnea	30	750.000	= 0.015	Significant
Cough	30	1125.000	= 0.002	Significant
Sputum	30	680.000	< 0.001	Significant
PEFR	30	994.500	= 0.242	Not significant
Laboured breathing	30	841.000	= 0.276	Not significant
Chest expansion	30	774.000	= 0.037	Significant
ACQ	30	708.500	= 0.002	Significant
Breath sounds	30	780.000	= 0.046	Significant

DISCUSSION

Tamaka shwasa (Bronchial asthma), a pranavaha srotogata vyadhi afflicting the movement of pranavata, is produced due to the involvement of pitta sthana. The involvement of ama is seen in the early stage of the disease; later gets associated with the vata and kapha vitiations. The disease has an episodic nature which precipitates by the specific nidana in each individual. The factor of atma asatmya is the main pathology in inducing the symptoms. The pathogenesis of shwasa is explained to occur due to the obstruction of the srotas by the kapha leading to the vata vimarga gamana. The treatment procedures explained can be identified as ones used during the vegavastha and others used during avegavastha. Thus the pathogenesis prompts the usage of treatment modalities which will work as nidana parivarjina, dosha shodhana or sroto avarodha hara. The immediate management of the disease plans for the cure to the attacks of the disease by giving immediate help. Kapha chedana, vilayana and sroto mardava will help the patients from ghurghuraka, kasa, shwasa and pratishyaya which are considered to be the cardinal features of tamaka shwasa. Thus abhyanga sweda and dhumapana were planned to serve this purpose. The differences in the mean values of Cough, ACQ, sputum, chest expansion, dyspnoea and breath sounds among the treatment groups shows that there is a statistically significant difference ($P = < 0.001$). This shows that the effect on these parameters is better in group B than in group A. The differences in the mean values of PEFR and laboured breathing among the treatment groups are not statistically significant. This reveals that the effect of both the treatments is almost equal in terms of the two parameters. Overall effect showed that effect was better in B, i.e. 23.738 % in group B and 15.163 % in group A. This means that the

haridra dhumapana shows a better relief in terms of the overall effect in the disease Tamaka shwasa.

Mode of action of abhyanga sweda in tamaka shwasa

Abhyangapurva sweda with nadi, sankara or prastara is useful in shwasa. Abhyanga is done with lavana yuktasneha¹¹. Lavana taila mentioned in this context produces vilayana of leena grathita kapha and makes it move into koshta for easy evacuation when used as purva karma. Sweda used alone, produces kapha vimukti, srotomruduta, vatanuloma, pravilayana of grathita kapha, swamargagamana of vata and reduction in vedana¹². In shwasa always snigdha sweda is preferred as ruksha produces vatakopa bhaya¹³.

Mode of action of Haridra dhumapana in tamaka shwasa

Haridra, the drug used in this study is mentioned in the context of shwasa disease for dhumapana as a rechana dravya¹⁴. Vairechanika dhumapana is very useful in treating all the kaphavataja diseases, shirogourava, peenasa, shleshma praseka, vaiswarya, kasa and shwasa which are the main things to be tackled in this disease¹⁵. As haridra is specifically referred in the context of shwasa, it is selected in the study for dhumapana. Haridra is having krimihara, twakdosahara, shothahara, vrana, kandu, visha and peenasahara action. Its immune stimulant, anti inflammatory, antibacterial, antioxidant, antiviral activities are also proved. Its volatile oil depletes histamine in lung tissue and after chronic use, inhibits histamine responses on tracheal chain, relaxes pulmonary pressure and inhibits serotonin and ACH responses¹⁶.

CONCLUSION

The role of atyayika chikitsa such as abhyanga, sweda, shamana, vama and dhumapana is very much identified in diseases like tamaka shwasa, kasa and many more. Treatment when followed in the specific pattern will help the patients in control of the agonising dyspnoea attacks. The vama karma along with virechana, brahmana chikitsa and shamana when performed between the attacks, prevents further attacks, eliminates khavaigunyata and improves the immunity of pranavaha srotas.

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