Research Article

AN EPIDEMIOLOGICAL STUDY OF TAMAKA SWASA W.S.R. TO BRONCHIAL ASTHMA

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Abstract

Tamaka swasa, one among the five varieties of swasa explained in Ayurveda, is analogous with the Bronchial Asthma mentioned in modern medicine. Though the nidana (causes) of Tamaka swasa are evident, contribution of each nidana towards the disease manifestation may be individualistic and need to be understood. This helps in the promotion of health status of patients of Tamaka swasa as avoidance of nidana is the basis of all treatments. The main objective of the study is to evaluate and analyze the etiological factors of Tamaka swasa. An observational study was done on 80 patients of Tamaka swasa, by using a self-structured questionnaire. The data was tabulated using SPSS 20 software and statistical analysis was done using Chi-square Goodness of Fit test. On survey study, based on Ahara Rasa (taste of food) use of Madhura rasa (sweet taste), Lavana rasa (salty taste) and Katu rasa (spicy taste), based on Ahara Guna (attribute of food) excessive use of Guru (heavy), Vidahi (causing heart-burn), Ruksha (dry) and Snigdha (unctous), based on Dravya (food articles), consumption of black gram, curd, beans, flour products, fish, tubers, canned food and bakery food and Adhyashana (excessive eating) in miscellaneous category were found statistically significant with p-value less than 0.05. Likewise, statistically significant nidana were found in the domains of Vihara (behavioral regimen) such as ativyayama (excessive body activity) (p=.000), Manasika (mental factor) such as atichintana (p=0.001) and Vyanjaka (triggering factors) such as exercise (p=0.000). So it was concluded that Tamaka swasa is mainly caused by Vatakara and Kaphakara Nidanas which can be Aharaja, Viharaja, Manasika or Vyanjaka, each having its own role in the manifestation of the disease.

Keywords: Nidana; Tamaka swasa; Bronchial Asthma.

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INTRODUCTION

Tamaka swasa, which is known by the name Bronchial Asthma in modern parlance is characterised by remissions and exacerbations, leaving the patient in pitiable situation. Bronchial Asthma currently affects approximately 300 million persons worldwide. The prevalence of asthma has risen over the last 30 years, with approximately 10-12 % of the adults and 15% of children affected by the disease.[1] In Ayurveda, nidana parivarjana (avoidance of causative factors) is given foremost importance in the management of any disease. Nidana (cause), dosha (humor) and dushya (impaired tissue elements) are the inevitable factors in the manifestation of disease. The inter-relationship between these three factors decides manifestation and non-manifestation of the disease.[2] Though the Nidanas of Tamaka swasa is known to all, the contribution of each Nidana towards the disease manifestation may be individualistic and need to be understood. This will be helpful for the promotion of health status of patients of Tamaka swasa as avoidance of Nidana is the basis of all the treatments. Hence, a survey study is planned to evaluate the etiological factors of Tamaka Swasa and to understand the contribution of each causative factor towards disease manifestation.

MATERIALS AND METHODS

Source of data

Patients of Tamaka Swasa from in and around Hassan, attending OPD and IPD of the institution were selected for the study after taking written consent.

Method of collection of data

A non-interventional observational study was done on 80 diagnosed cases of Tamaka swasa by using a self-structured questionnaire. The questionnaire had the domains covering Aharaja Nidana (dietary causes), Viharaja Nidana (behavioral causes), Manasika Nidana (causes pertaining to mental factors), and Triggering-Factors. The domain Ahara was further subdivided on the basis of Rasa (preference of different tastes), Guna (attributes) and Dravya (different food articles) and miscellaneous category. The questionnaire was in optional format with four-point likert scale pattern for the domains covering Ahara, Vihara and Manasika. The options in four-point likert scale included Regularly, Frequently (1-6 days in a week), Often (once/twice in a month) and Never. The domain of Triggering Factors was based on a two-point scale, with options of Yes and No. The variation in etiological factors responsible for manifestation of the disease was studied and conclusion was drawn based on the results obtained. The study was conducted after getting approval from the institutional ethical committee with IEC No.: 37/13-14.

Inclusion criteria

1. Patients suffering from Tamaka swasa above 16 yrs of age were included in the study.
2. Patients were selected irrespective of the gender, religion, occupation and socio-economic status.

Exclusion criteria

1. Patients with Pulmonary TB, COPD, Bronchiectasis, Cardiac asthma and Tropical eosinophilia or with any other systemic disorders were excluded.

Collection, Tabulation and Statistical tests

Data obtained during study was entered and tabulated using software SPSS (Statistical Package for Social Sciences) version 20 and statistical analysis was done using Chi-square Goodness of Fit test. The nidanas were analyzed based on the P-value obtained. P-value less than 0.05 are considered as statistically significant.

OBSERVATIONS AND RESULTS

Out of the 80 patients included in the study group, 31.25% of the patients belong to the age-group of 16-26 yrs, followed by 20% of the patients in the age-group of 26-36yrs, 18.75% in the age-group of 36-46 yrs, 16.25% in the age group of 46-56 yrs and 13.75% in the age group of 56-66 yrs. Gender wise distribution showed that 53.7% were females and 46.3% were males. The occupation wise distribution revealed that 27.5% of the patients involved in field work, 25% involved in the house hold work, 21.25% of them were students, 7.5% involved in desk work and 18.75% were involved in other activities. Majority of the patients had the complaints of breathing difficulty, wheeze and cough (i.e. 95%, 92.5% and 81.25% respectively) followed by chest-tightness (61.25%). In the study-group, 63.75% of the patients had common-cold as one of the associated symptoms, 45.5% with running nose, 42.5% with sneezing, 23.75% with anorexia, 52.5% with sleep loss, 60% with discomfort on lying down, 35% with head ache, 13.75% with chest-pain and symptoms such as fever, sore-throat, voice-hoarseness and palpitation were present in 3.75%, 6.25%, 8.75% and 7.5% of the patients respectively.

The distribution based on age of onset showed that 60% of the patients had their onset of disease 1-5 years back, 23.75% had the onset 5-10 years back, 7.5% had the onset 10-15 years back, 3.75% had their onset 15-20 years and 20-25 years back and 1.25% had 30-35 yrs back. The distribution based on mode of onset showed that 71.25% of the patients had sudden onset and 28.75 % of the patients had gradual onset of the disease. Based on time of occurrence, 50% of the patients had the time of occurrence of their symptom during night hours, 30% had no particular timing for manifestation of their symptom and 15% had their symptoms on early morning on awakening and 5% had the symptoms during evening. Regarding the periodicity of symptoms 65% of the patients had seasonal periodicity of symptoms, 27.25% of the patient had irregular periodicity and 7.75% had the symptoms perennially.

More than one prodromal symptom was found in many patients. Among them, cough was present as a prodromal symptom in 86.25% of the patients, followed by wheeze in 77.5 % of the patients, sneeze in 43.75% of the patients and a minimum of nasal irritation and nasal discharge in 12.5% and 18.75% respectively.

In consideration to the Nidanas 65 patients among the study population, consumed madhura rasa (sweet food items) frequently and 15 patients consumed often. For N=80, 52 patients consumed lavana rasa (salty food items) often and 28 patients frequently whereas 40 patients consumed katu rasa (spicy food items) regularly, 36 patients frequently and 4 patients often.

For N=80, 73 patients consumed Guru bhojana (heavy to digest food such as meat, milk and milk products, flour products or any others) frequently ,5 patients regularly and 2 patients often. 48 patients consumed Vidahi bhojana (food causing heart burn such as pickles, chillies, sugarcane juice extracted by machine or any others) frequently, 9 patients regularly, 22 patients often and 1 never. 49 patients consumed Ruksha bhojana (dry food items like ground nuts, green peas, bengal gram) often, 27 patients frequently, and 4 patients never. 50 patients consumed Vishtambi bhojana (constipating food like sprouted grains, ground nuts) often, 21 patients frequently, 1 patient regularly, and 8 patients never. 53 patients consumed Snigdha bhojana (oily foods) frequently, 20 patients regularly, 7 patients often.

For N=80, 37 patients never consumed canned food (preserved food in containers such as sauces, pickled foods or any others) 30 patients often and13 patients frequently. 37 patients consumed bakery food (like cake,

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pastries, cookies, biscuits or any others) frequently, 30 patients regularly and 12 patients often and 1 never. For N=80, 56 patients consumed flour products frequently, and 24 regularly. 74 patients consumed beans frequently, and 6 often. 76 patients consumed black gram frequently, and 4 regularly. 34 patients consumed fish often, 32 patients frequently and 14 never. 30 patients consumed tubers frequently, 36 patients often and 14 never. 55 patients consumed curd regularly, 24 patients frequently and 1 often. 61 patients indulge in Adhyashana (consuming food before the digestion of previous meal) and 19 never.

For N=80, 23 patients indulged in ativyayama (excessive exercise) regularly, 44 patients frequently, 4 often and 9 never. 14 patients indulged in ati-adhwa (excessive walking) regularly, 58 patients frequently, 5 often and 3 never. 3 patients indulged in bharavahana (lifting heavy objects) regularly, 42 patients frequently, 12 often and 23 never whereas 28 patients indulged in divaswapna (day-sleep) regularly, 28 patients frequently, 3 often and 21 never. 28 patients are exposed to dust regularly, 48 patients frequently, and 4 often.

For N=80, 63 patients were afflicted with Atichintana (worry) frequently, 11 often and 6 never. 58 patients got afflicted with bhaya (fear) frequently, 19 occasionally and 3 never, whereas 38 patients got afflicted with shoka (sorrow) frequently, 34 occasionally and 8 never. 34 patients got afflicted with krodha (anger) frequently, 42 occasionally and 4 never. For N=80, Exercise was found as the triggering factor in 57 patients and absent in 23 patients whereas House dust was found as the triggering factor in 74 patients and absent in 6 patients. Change in weather was found as the triggering factor in 52 patients and absent in 28 patients.

In the present study, based on the observations made in 80 patients who fulfilled the inclusion criteria, the Nidanas of Tamaka swasa were

analyzed and result is presented as follows after subjecting to Chi-square-Goodness-of-Fit Test.

Among the Ahara rasa, Madhura, Lavana and Katu Rasa pradhana aharas showed high significance in the study with P-value of 0.001, 0.007 and 0.000 respectively. (Table1) Amla Rasa showed the P-value of 0.264 which suggests non-significance in the study. (Table1) Among the Ahara Gunas, Guru, vidahi, ruksha and snigdha gunas were found significant in the study, whereas vishtambi-guna was found non-significant with p-value of 0.396. (Table 2)

Among the Dravyas, consumption of black gram, curd, beans, flour products, matsya, tubers, canned food and bakery food showed statistically high significance. (Table 3) The consumption of fast-food showed the P-value of 0.896 suggesting non-significance. (Table 3) The use of unboiled milk and sesame oil showed P-value of 0.000 which indicated high significance in terms of independence in causation of disease. (Table 3)

In the miscellaneous group, Adhyashana showed high significance with P value of 0.001, whereas Vishamashana showed statistically non-significance with P-value of 0.180. (Table 4)

Among the Viharaja-nidanas Ati-Vyayama, Ati-Adhwa, Bharadvahana, Divaswapna, Ati-atapa-sevana, Rajo-sevana, Dhuma-sevana, Anila-sevana and residing in Sheeta-sthana showed statistically high-significance with p-values of 0.000, 0.001, 0.001, 0.000, 0.001, 0.000, 0.001, 0.001 and 0.001. (Table 5)

Vegadharana (suppression of natural urges), indulgence in smoking, alcohol and tobacco were found statistically significant in terms of independence in the causation of the disease. (Table 5)

Table 1: Chi-square significance based on ahara rasa

Ahara Rasa	Mean±SEM	P-Value	Level of Significance
Madhura Rasa	2.81±0.044	0.001	HS
Amla Rasa	2.14±0.056	0.264	NS
Lavana Rasa	2.35±0.054	0.007	HS
Katu Rasa	3.45±0.066	0.000	HS

Table 2: Chi-square significance based on ahara guna

Ahara guna	Mean±SEM	P-Value	Level of Significance
Guru bhojana	3.04 ±0.033	0.001	HS
Vidahi bhojana	2.81±0.071	0.000	HS
Ruksha bhojana	2.29±0.062	0.001	HS
Vishtambi bhojana	2.19±0.069	0.396	NS
Snigdha bhojana	3.16±0.063	0.001	HS

Table 3: Chi-square significance based on ahara dravya

Ahara Dravya	Mean±SEM	P-Value	Level of Significance
Black-gram	3.05±0.025	0.001	HS
Flour products	3.30±0.025	0.001	HS
Beans	2.93±0.030	0.000	HS
Fish	3.08±0.119	0.011	S
Tubers	2.69±0.085	0.001	HS
Curd	3.68±0.056	0.000	HS
Unboiled milk	2.20±0.131	0.000	HS
Sesame oil	1.41±0.063	0.000	HS
Canned food	2.43±0.123	0.003	HS
Fast food	1.70 ±0.082	0.896	NS
Bakery food	3.20±0.062	0.001	HS

Table 4: Chi-square significance of miscellaneous

Other Nidanas	Mean±SEM	P-Value	Level of Significance
Adhyashana	0.81±0.044	0.001	HS
Vishamashana	0.43±0.056	0.180	NS

Table 5: Chi-square significance of various viharaja nidanas

Viharaja Nidanas	Mean±SEM	P-Value	Level of Significance
Ativyayama	3.01±0.10	0.000	HS
Ati-adhwa	3.07±0.070	0.001	HS
Bharavahana	2.31±0.105	0.001	HS
Divaswapna	2.60±0.140	0.000	HS
Vegadharana	1.03±0.018	0.000	HS
Rajo-sevana	3.30±0.063	0.000	HS
Ati-atapa sevana	2.95±0.064	0.001	HS
Dhuma-sevana	2.96±0.086	0.001	HS
Anila sevana	3.16±0.065	0.001	HS
Sheeta-sthana	3.50±0.096	0.001	HS
Smoking	1.60±0.106	0.000	HS
Tobacco	1.63±0.106	0.000	HS
Alcohol	1.58±0.114	0.000	HS

Among the Manasika Nidanas Atichintana, Bhaya, Shoka and Krodha showed statistically high-significance with P-values of 0.001, 0.000, 0.001 and 0.000. (Table 6) Among the Triggering Factors, exercise, weather changes and house dust showed statistically high-significance with p-value of 0.000. (Table 7) Lying posture was found statistically-significant with P-value of 0.014, whereas smoke showed P-value of 0.823 suggesting non-significance. (Table 7) Respiratory infections, inhalation of pollens, perfumes and fragrance, use of cosmetics, air-conditioners and stress were found statistically significant in terms of independence in triggering the attack of breathlessness. (Table 7)

DISCUSSION

Age

The age-wise distribution in the present study is in consistent with the finding in Indian study on epidemiology of Asthma, Respiratory symptoms and Chronic Bronchitis that more than 50% of the total Asthma population in the survey including rural and urban habitat falls under age group between 15 and 35.

Gender

However, the link between gender and incidence of asthma has not been established. In early life, the prevalence of Asthma is higher in boys. At puberty, however, the sex ratio shifts, and asthma appears predominantly in women.[3]

Occupation

Majority of the patients in the study group were agricultural workers. Agricultural producers are exposed to a wide variety of allergens than can cause asthma or aggravate existing asthma. They are exposed to a wide variety of allergens such as grain dust, insects, pesticides, animal products, pollens and chemicals. This may be the reason for triggering as the interaction of allergens with the host factors being responsible for expression of Asthma complex.[4] Also this is in consistent with Ayurvedic dogma that Raja (dust) Dhuma (smoke) and Vata (wind) are the Aganthu Karaka Nidana (external causes) for Tamaka Shvasa.

Age and Onset

The distribution based on age of onset indicated towards the increase in the prevalence rate of Tamaka Shvasa these days as 60% of the population had their onset of disease, merely 1-5 years back. This can be attributed towards the growing industrialization and urbanization.

Mode of Onset

The reason for majority of the patients with sudden onset of Asthma (i.e. 71.25%) might be because of the fact that, during the time of sudden-onset, neutrophils exceeded eosinophils as per previous studies.[5]

Time of Occurrence

Majority of the patients had the time of occurrence of their symptom during night hours. This might be because of the fact that levels of adrenaline and corticosteroids that protect against Asthma are lowest between midnight and 4 am, making it more likely to experience symptoms during these times.

Ahara Rasa

Based on Ahara Rasa, the consumption of Madhura Rasa, Lavana Rasa and Katu Rasa were found to be statistically significant. (Table 1) Madhura rasa by its swabhava (nature) is sheeta (cold), snigdha (unctous) and guru (heavy). Its ati-sevana results in swasa (breathing disorders), kasa (cough), prathisyaya (rhinitis) jwara (fever) etc.[6]

Table 6: Chi-square significance of various manasika nidanas

Manasika Nidanas	Mean±SEM	P-Value	Level of Significance
Ati-chintana	2.73±0.069	0.001	HS
Bhaya	2.69±0.061	0.000	HS
Shoka	2.38±0.074	0.001	HS
Krodha	2.38±0.065	0.000	HS

Table 7: Chi-square significance of various triggering factors

Triggering Factors	Mean±SEM	P-Value	Level of Significance
Exercise	0.71±0.051	0.000	HS
Lying posture	0.64±0.054	0.014	S
Respiratory Infections	0.14±0.039	0.000	HS
House-dust	0.93±0.030	0.000	HS
Pollens	0.08±0.03	0.000	HS
Smoke	0.49±0.056	0.823	NS
Stress	0.29±0.051	0.001	HS
Change in weather	0.40±0.055	0.000	HS
Air conditioners	0.08±0.021	0.000	HS
Cosmetics	0.01±0.013	0.000	HS
Perfumes	0.06±0.027	0.000	HS

Ati sevana of lavana rasa results in kapha vishyandana (liquefaction of kapha),[7] the liquefied kapha can cause avarodha (obstruction) in pranavaha srothas, thereby resulting in swasa. Katu rasa by its swabhava is laghu (light), ruksha (dry) and also sneha (unctousness), meda (adipose-tissue), kleda (watery element) upashoshaka. Therefore, its atisevana can cause karshana (emaciation), bala kshaya (decrease of strength) and vataja vikaras.[8] Ati-sevana of katu rasa can cause vata prakopa, prakupita vata takes pratiloma gati (reverse direction), dislodges kapha dosha and causes sanga (obstruction) in pranavaha srothas resulting in swasa.

Ahara Guna

Based on Ahara Guna, the consumption of Guru, Vidahi, Ruksha and Snigdha Guna yukta bhojanas are found to be statistically significant. (Table 2) Guru by its dominant mahabhutas, i.e. Prithvi (earth) and jala (water) is kapha vardhaka, chirapaaki (slow-digestion) and causes upalepa (coating) in the shareera srothas. Vidahi guna by its swabhava is guru, chirapaaki and causes pitta prakopa.

This prakupita pitta might cause the inflammation in airways, thus resulting in breathing difficulty. Ruksha by its dominant mahabhutas (gross existents), vayu (air element) and aakasha (ether element) is vatakara and causes shoshana (emaciation). The body is sustained by ojas which is snigdha and rookshata naturally reduces it. Moreover, rukshata can cause dushti of both pranavaha and udakavaha srothas. Vishtambi ahara when taken for a long duration of time, can lead to vata-prakopa and thus might contribute towards disease process. An optimal amount of snigdha causes cohesion, but in excess it causes separation of particles, which can be understood as shithilatha in shareera.

Ahara Dravya

Based on Dravya, the consumption of canned food, bakery food, flour products, beans, black-gram, fish, tubers and curd were found to be significant. (Table 3) A chemical named BPA (bisphenol A) was found in the aluminium linings of canned food and drinks. The researchers have found that BPA increased allergic sensitization and inflammation in the lungs.[9]

Recent researches have revealed that the sputum samples of those who had eaten the burger meal had an increased number of immune cells called neutrophils in their airways. Neutrophils play a role in triggering inflammation.[10] Pishta ahara (flour product) has ushna veerya (hot potency), causes kapha pitta prakopaka, is vidahi, natibalakara and guru.[11] Thus due to ushna and vidahi guna, it can cause dushti of udakavaha srothas, which in turn is involved in the pathogenesis of Tamaka-swasa. Flat-Beans are Ruksha, amla-vipaka, guru, vidahi and vibandhakaraka (constipating) as stated in the Dhanyavarga of Bhavaprakasha. Its atisevana results in vata prakopa, vibandha, pratiloma gati of vata and dushti of pranavaha srothas. Masha (black gram) is guru, snigdha, ushna and has madhura rasa. This cause prakopa of kapha and pitta, thus its atisevana contributes towards the disease process. Matsya is abhishyandi (produces excess secretion in the tissue pores causing their blockage), guru, ushna, snigdha and thus causes sroto upalepa (coating inside channels). Tubers have sheeta veerya (cold potency), guru, madhura vipaka (sweet taste at end of metabolism), kaphavridhikara.[12] This can contribute towards the disease process. Dadhi (curd) possess qualities snigdha, amlapaka, guru, ushna, sleshmakrut and abhishyandi.[13] Dadhi-sevana causes sleshma prakopa, results in sroto-upalepa (coating inside channels), due to abhishyandi guna, thus causes avarodha (obstruction) in pranavaha srothas.

Miscellaneous

In the miscellaneous group, Adhyashana was found to be statistically significant. (Table 4) Adhyashana can result either in the manifestation of dreadful diseases/death as it causes tri-dosha prakopa in the body.[14]

Vihara

Based on Viharaja Nidanas, indulgence in ativyayama, atiadhwa, bharadvahana, diwaswapna and exposure to dust were found to be statistically significant. (Table 5) Excessive indulgence in vyayama is said to cause trishna, kshaya,pratamaka, raktapitta, srama and klama.[15] Ati-adhwa causes vata prakopa thereby causing dhatu kshaya and thus resulting in dushti of pranavaha srothas. Bharavahana causes dhatu kshaya and thereby vata prakopa, vimarga gamana of vata, thus leading to pranavaha sroto dushti. Except in greeshma-rtu, divaswapna causes aggravation of kapha and pitta, thus contributes to the disease process.[16] Dushta vayu has the Abhishyandi guna. Moreover, it can cause kasa, prathisyaya, shiroruja in long run.[17]

Manasika

Among the Manasika Nidanas, Atichintana, Bhaya, Shoka and Krodha were found to be statistically significant. (Table 6) This is because Atichintana, bhaya and shoka can cause vata prakopa, thus leading to rasa dhatu shoshana in hrudaya and hence resulting in the dushti of pranavaha srothas. Krodha causes pittaprakopa, thus contributes in disease process.

Triggering Factors

Among the triggering factors, change in climate, exercise and exposure to dust were found as statistically significant as these can trigger the interaction of allergens with the host factors resulting in exacerbation of Asthma. (Table 7)

CONCLUSION

Tamaka swasa is a vata-kaphaja vyadhi, with samudbhava (origin) in the pitta sthana. Thus the tridoshas are involved in the disease process with vata and kapha doshas mainly contributing towards the etiology of disease and pitta dosha in the pathology of disease. Vyanjaka hetus play a major role in bringing out the anutklishta dosha or leena dosha (humors hidden within tissues) of the body.

Through this study, an attempt has been made to critically analyze the nidanas of Tamaka swasa in a defined population. The present study reveals that nidanas mentioned in the Ayurveda classics are relevant to present era and hence avoidance of these nidanas help in the promotion of health status of patients of Tamaka swasa.

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