

CLINICAL STUDY ON ETIOPATHOGENESIS OF KAPHAJA KASA (CHRONIC BRONCHITIS) AND ITS SAMPRAPTI VIGATANA BY PUSHKARADI KWATHA

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Abstract

The term chronic bronchitis is used to describe a syndrome in which the patient produces persistent cough with expectoration on most days for at least three months of the year for at least two consecutive years in the absence of any other cause for the cough. The symptoms of chronic bronchitis simulate with the lakshanas of Kaphaja kasa. Pushkaradi kwatha has been mentioned in Cakradatta Kasa chikitsa adyayam. Pushkaramoola, Sunti, Katphala, Bharngi being the important ingredients having kaphahara action. Considering the increased incidence of air pollution, allergic manifestations and chronic bronchitis, present study has been intended to evaluate the etiopathogenesis of Kaphaja kasa and its Samprapti Vigatana by Pushkaradi kwatha. *Pushkaradi kwatha* was found to be effective in reducing the subjective criterias of *kaphaja kasalike* productive cough, sputum, disturbance in sleep, rhinitis, and loss of appetite.

Key words: Kaphaja kasa; Pushkaradi kwathai; Samprapti vigatana; Chronic bronchitis.

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INTRODUCTION

The prevalence of diseases is as old as the civilization, which affects the activities of an individual. All diseases are not life threatening but it may hamper the daily life of an individual. Among such diseases kaphaja kasa is one which is elaborately mentioned by our Acharyas in all Ayurveda classics. Here pranavaha srothas is obstructed by kapha, since it conveys prana, any disease affecting this, should be treated first. Among five types of kasa, kaphaja kasa is one where prabhuta, bhahula,^[1] Ghana (heavy), snigdha (unctuousness), sweta kapha (whitish phlegm) is present.^[2] Kasa is one of the pathological conditions explained in many contexts of Ayurveda texts. Kasa may develop as an independent disease, may be a Lakshana (symptoms) associative to other disease, sometimes may develop as Upadrava of a disease. Kasa is broadly classified as Ardra kasa (productive cough) and Shushka kasa (dry cough). Understanding and differentiating the Kasa is most important to treat the condition effectively.^[3] The term chronic bronchitis is used to describe a syndrome in which the patient produces persistent cough with expectoration on most days for at least three months of the year for at least two consecutive years in the absence of any other cause for the cough.^[4] Approximately 20% of adult males and 5% of adult women are affected.^[5] The recent 'Indian Study of Asthma, Respiratory Symptoms and Chronic Bronchitis' (INSEARCH) shows 85,105 men and 84,470 women from 12 urban and 11 rural sites reported. The overall prevalence of chronic bronchitis to be 2.05% (adults aged ≥ 15 years) 3.49% (adults > 35 years) are affected. The national burden was thus estimated to be 14.84 million. The symptoms of chronic bronchitis simulate with the lakshanas of kaphaja kasa. Pushkaradi kwatham has been mentioned in Cakradatta Kasa Chikitsa Adyayam. Pushkaramoola, Shunti, Katphala, Bharangi, Pippali being the important ingredients in this formulation

appear to reduce the signs and symptoms of kaphaja kasa.^[6] Considering the increased incidence of air pollution, dust etc, the present research work entitled "CLINICAL STUDY ON ETIOPATHOGENESIS OF KAPHAJA KASA AND ITS SAMPRAPTI VIGATANA BY PUSHKARADI KWATHA" is planned to see the merits of oral administration of Pushkaradi kwatha.

AIMS AND OBJECTIVES

- To study the etiopathogenesis of kaphaja kasa.
- To study the process of Samprapti vigatana through Pushkaradi kwatha.

MATERIALS AND METHODS

Clinical source

For the present study patients of either sex will be selected at random without bias of social, economic or religious status from the O.P.D and I.P.D of Alva's Ayurveda Medical College, Medical camps and other referrals.

Exclusion criteria

1. Patients with other systemic disorders and metabolic disorders.
2. Patients with other chronic & infective disorders of respiratory system.

Diagnostic criteria

Diagnosis will be made on the basis of lakshanas of kaphaja kasa mainly

- Kasa with bahula kapha
- Ghana nishteevana

Study design

Open clinical trial with pre and post test design, 30 patients fulfilling the diagnostic and inclusion criteria were selected

irrespective of sex, religion, socio-economic status, etc.

Intervention

Sample Size: 30

Drug: Pushkaradhi Kwatham

Dose: 45ml twice a day before food

Duration: 28 Days

Follow up: 15 days after treatment

Assessment criteria - Subjective criteria

Cough scoring

No cough – G0

Cough for one short period – G1

Cough for more than two short periods – G2

Frequent coughing, which did not interfere with usual day time activities – G3

Frequent coughing, which do interfere with usual day time activities – G4

Distressing cough for most days – G5

Nishteavana (Expectoration)

Absent – G0

1-10ml – G1

11-20ml – G2

>20ml – G3

Sputum

The quality and consistency of sputum was observed and graded as follows

No sputum – G0

Serous expectoration with traces of thick sputum – G1

Moderately thick solid sputum – G2

Thick large quantity of solid sputum – G3

Disturbance in sleep

Cough not interfering sleep – G0

Cough with occasionally disturbed sleep – G1

Gets cough before sleeping and/or awakens him in the morning due to cough – G2

Cough always disturbs sleep – G3

Peenasa

No nasal discharge – G0

Intermittent nasal discharge – G1

Persistent nasal discharge (watery or mucoid) – G2

Persistent nasal discharge (thick or odourous) – G3

Kanta kandu

None – G0

Mild – G1

Moderate – G2

Severe – G3

Swarabheda (phonation)

Not affected – G0

Change in the voice during morning hours, pain in throat during speech – G1

Change in the voice throughout day and night, pain in throat able to speak only phrases – G2

Unable to speak/ able to speak with difficulty – G3

Aruchi

Willing towards normal food – G0

Willing towards most liked foods and not others – G1

Unwilling for food but could take meals only – G2

Totally unwilling for meals, does not take meal – G3

Kapha sampoornagauravam

No heaviness in the chest – G0

Feels heaviness but doesnot hamper daily activity – G1

Feels heaviness all over the chest which hampers movement of the body – G2

Mandagni

Normal appetite after 3- of previous food taken – G0

Appetite after 6-9 hours of previous food taken – G1
Appetite after 9-12 hours of previous food taken – G2
No appetite after 12 hours of previous food taken – G3

PEFR

- GRADE 0 : 401-500 /min
- GRADE 1 : 301-400 /min
- GRADE 2 : 201-300 /min
- GRADE 3 : 101-200 /min

Rhonchi / Crepitations

Absent on forced breathing – G0
Few rhonchi or crepitations found on forced breathing – G1
Few scattered bilateral rhonchi or crepitations on normal deep breathing – G2
Innumerable highpitched bilateral rhonchi or crepitation on normal deep breathing – G3

OBSERVATION AND RESULTS

Among 30 patients 8 patients (26%) belongs to the age group 16-30. 8 patients (26%) belongs to age group 31-45. 14 patients belongs to the age group 46-60. Among 30 patients 18 patients 60% were male. 12 patients (40%) were female. Among 30 patients 19 patients (64%) were from hindu. 7 patients (23%) were from Christian. 4 patients 13% were from muslim. Among 30 patients 9 patients (30%) belongs to poor class, 20 patients (70%) belongs to middle class. The incidence of *kaphaja kasa* was more observed in middle class. Among 30 patients, 5 patients (16.66%) are doing office work, 4 patients (13.33%) are business man, 1 patient (3.33%) is nurse, 5 patients (16.66%) are house wives, 10 patients (33.33%) are labors, 3 patients (10%) are lectures, and 2 patients (6.66%) are students. Among 30 patients 27 patients (90%) belong to urban area, 3 patients (10%) belong to rural area. Among 30 patients 23 patients 97% were married, 7 patients 3% were

unmarried. Among 30 patients 1 patient 3% is vegetarian, 29 patients 97% are mixed, and 0 non vegetarians. Among 30 patients 9 patients 30% are having history of allergy to dust pollen etc, 21 patients 70% are not having allergic history. Among 30 patients 12 patients (40%) had seasonal onset, 8 patients (27%) had perennial onset, and 10 patients (33%) had irregular onset. Among 30 patients 8 patients (26%) belongs to the age group 16-30. 8 patients (26%) belongs to age group 31-45. 14 patients belongs to the age group 46-60. Among 30 patients 18 patients 60% were male. 12 patients (40%) were female. Among 30 patients 19 patients (64%) were from hindu. 7 patients (23%) were from christian. 4 patients 13% were from muslim. Among 30 patients 9 patients (30%) belongs to poor class, 20 patients (70%) belongs to middle class. The incidence of *kaphaja kasa* was more observed in middle class. Among 30 patients, 5 patients (16.66%) are doing office work, 4 patients (13.33%) are business man, 1 patient (3.33%) is nurse, 5 patients (16.66%) are house wives, 10 patients (33.33%) are labors, 3 patients (10%) are lectures, and 2 patients (6.66%) are students. Among 30 patients 27 patients (90%) belongs to urban area, 3 patients (10%) belongs to rural area. Among 30 patients 23 patients 97% were married, 7 patients 3% were unmarried. Among 30 patients 1 patient 3% is vegetarian, 29 patients 97% are mixed, and 0 non vegetarians. Among 30 patients 9 patients 30% are having history of allergy to dust pollen etc, 21 patients 70% are not having allergic history. Among 30 patients 12 patients (40%) had seasonal onset, 8 patients (27%) had perennial onset, and 10 patients (33%) had irregular onset. Among 30 patients the onset of 5 patients (17%) was sudden, 2 patients (7%) were gradual, 15 patients (50%) were episodic, and 8 patients (27%) were continuous. Among 30 patients of *kaphaja kasa* , for 17 patients (57%) *kasa* gets aggravated due to cold food stuff , 15 patients (50%) due to cold exposure, 8 patients (27%) during early morning, 6 patients (20%) at

night, 4 patients (13%) had no significant aggravating factors, and 7 patients (23%) had other causes like exposure to dust, strong odor etc.,. Among 30 patients (50%) of kaphaja kasa, 15 patients (10%) shows relief while taking hot food, 3 patients (17%) shows relief in hot environment, 5 patients shows relief during day, 11 patients (37%) shows relief after expectoration of sputum, and 4 patients (14%) had no significant relief. Among 30 patients 12 patients 40% were vatapitta, 6 patients 20% were pittakapha, 12 patients 40% were vatakapaha.

Complaints

Among 30 patients, 28 patients (93%) had bahula kapha, 21 patients (70%) had Sandra kapha, 26 patients (87%) had Ghana kapha, 5 patients (17%) had madhura kapha, 12 patients (40%) had peensa. Among 30 patients, 14 patients (46.66%) had kanta kandu, 8 patients (27%) had swarabheda, 15 patients (50%) had aruchi, 18 patients (60%) had mukha lepa, 10 patients (33.33%) had loss of appetite, 11 patients (37%) had shira shoola, 4 patients (13%) had kapahasampoornagauravam.

Nidana

Among 30 patients 20 patients (65.66%) had sheeta ahara, 8 patients (26.66%) had dadhi, 17 patients (56.66%) had guru ahara sevana, 15 patients (50%) utkledi ahara sevana, and 19 patients (63.33%) had madhura ahara sevana. Among 30 patients, 13 patients (43%) are exposed to dhumoghata, 25 patients (84%) are exposed to raja, 15 patients (50%) had shrama, 3 patients (10%) had bhojanasyaavarodha, 9 patients (30%) are doing vegavarodha, 8 patients (27%) are doing vegaudeerana, 12 patients (40%) are doing diwaswapna, 9 patients 30% are doing ratrijagarana.

RESULTS

Results are narrated in Table 1. Overall effects of treatment are mentioned in Table 2 and Graph 1.

DISCUSSION

Age

In this study incidence of Kaphaja kasa is seen in people between age group 46-60 years, there is no age specification mentioned for the disease Kaphaja kasa. In this study the probable cause for the higher incidence of kaphaja kasa may be due to increased exposure of aharaaja and viharaja nidana for several years, leading to this chronic disease.

Sex

The majority of patients were males ie 60% were males and 40% were females, this may be because of nidana like smoking, exposure to external polluted environment more when compared to females.

Religion

There is no relation between the disease and religion. Since the study was conducted in area where Hindu population is high, higher incidence was seen in Hindu religion people.

Socio Economic Status

Higher incidence of the disease is seen in middle class people (70%) followed by poor people (30%). This could be due to the presence of residence in high polluted areas and poor hygiene.

Table 1: Showing significance of parameters

CRITERIA	MEAN		M D	% OF RELIEF	P value	SIGNIFICANCE
	B T	A T				
Kasa vega	2.3	0.99	1.31	56.95%	<0.001	Significant
Nishteevana	1.33	0.33	1	74.96%	<0.001	Significant
Sputum	1.5	0.400	1.1	70%	<0.001	Significant
Peenasa	0.533	0.166	0.367	69%	0.003	Significant
Disturbance in sleep	1.133	0.1000	1.0333	91.14%	<0.001	Significant
SwaraBheda	1.500	0.375	1.125	75%	0.007	Significant
Aruchi	0.566	0.133	0.433	76.5%	<0.001	Significant
Loss of appetite	0.969	0.233	0.734	75.90%	<0.001	Significant
Added sounds	1.7667	0.7667	1.00	56.6%	<0.001	Significant
PEFR	1.333	0.7000	0.6333	47.48%	<0.001	Significant

Table 2: Showing overall effect of treatment

RELIEF	NUMBER	%
Complete relief	4	13.33%
Marked relief	15	50%
Moderate relief	10	34%
Mild relief	1	3%
No relief	0	0

Graph 1: Overall effect of treatment

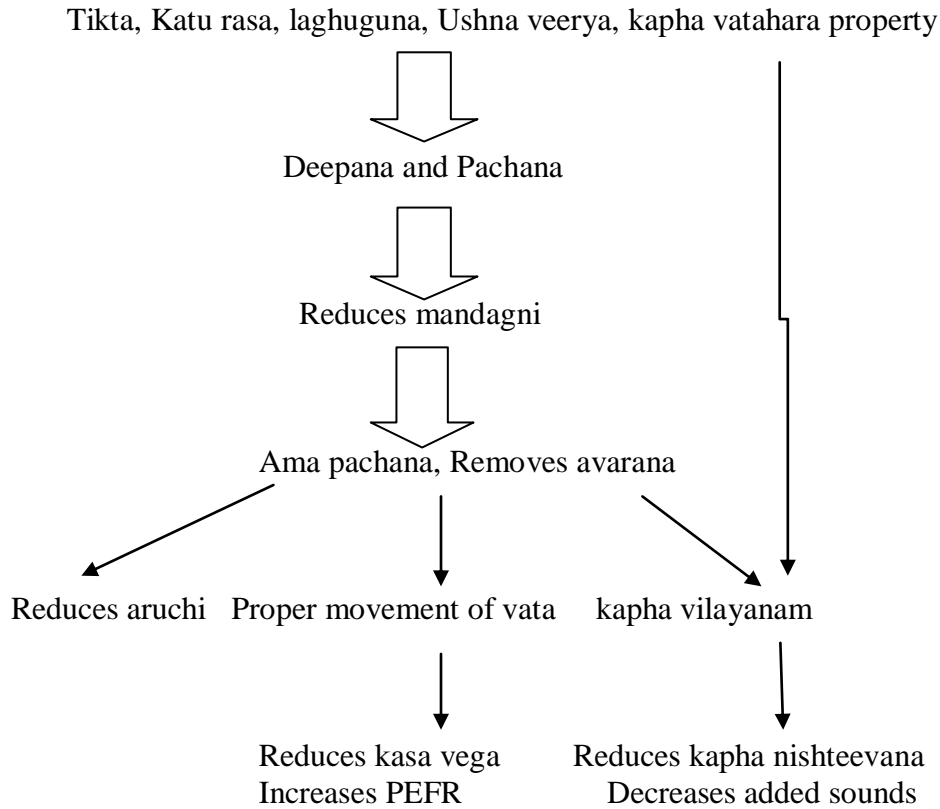


Occupation

It was observed that majority of the patients were labors 33.33% followed by house wives, office working people 16.66%, and others.

This is because more chance of exposure to allergens like dust, polluted air, house dust mites etc. Most patients admitted that exposure to these allergens worsens the condition.

Figure 1: Samprapti vigatana of kaphajakasa



Habitat

Study revealed that higher incidence of kaphaja kasa is seen in patients who are residing in urban area. This is because of increased pollution in urban areas.

Marital Status

High incidence was seen among married people ie 96%. This is because of the selection of age criteria.

Diet

Higher incidence was seen in people with mixed diet ie 97%. Since the study was conducted in coastal area, usage of fish is more common, which is considered as kaphavardaka ahara. Usage of oily, and cold food stuffs will lead to Kaphaja kasa.

Allergic History

Exposure to dust, smoke, cold environment allergy is seen in 30% of the patients. These patients developed sudden onset of the disease compared to other patients.

Periodicity

The recurrence of Kaphaja kasa is seen more during cold season, this shows the impact of season on Kaphaja kasaie 40%.

Onset

The onset of the season is mostly episodic ie (50%), this may be due to higher incidence of Kaphaja kasa in cold season.

Aggravating Factors

Eating cold food (57%), exposure to cold environment (50%) aggravates the condition. Also diurnal changes like early morning (27%), night (20%) increase the kapha dosha, which further aggravates the disease. Other causes like exposure to dust, smoke etc also increase Kaphaja kasa.

Relieving Factors

Taking hot food (50%), during day time (17%), hot environment (10%) relieves Kaphaja kasa all these are causing liquefaction of kapha from the upper respiratory tract, kapha nishteevana (37%) leads to clearing of the airways.

Prakruti

Higher incidence of Kaphaja kasa is seen in Vatakapha (40%), and Vatapitta (40%) prakruti persons.

Agni Bala

Mandagni is seen in 60% of the patients, since excessive kapha leads to agni mandhya. This shows that agni mandhyat plays an important role in the pathology of Kaphaja kasa.

Main Complaints

Among 30 patients 56.66% had G2 kasavega, 26.6% had G3, 10% had G1, and 6.66% had G4. 50% of patients had 11-20ml of kapha, and 50% of patients had moderately thick sputum. This shows that these are the cardinal lakshanas of Kaphaja kasa.

Associated Complaints

Among 30 patients, 60% patients had Mukhalepa, 50% of patients had Aruchi, 40% had Peenasa, 46.66% had Kanta kandu, 33.33% had loss of appetite, 30% had

disturbance in sleep, 36.66% patients had Shira shoola, 13.33% had Gauravam.

Aharaja Nidana

Sheeta (65.6%), Madhura (63.3%), Guru (56.6%), Utkledi (50%) ahara, and Dadhi (26.6%) were predominantly seen as the nidana in the present study. These are ahara which are having kapha prakopaka property leading to the disease.

Viharaja Nidana

Exposure to Raja (84%), Dhooma (43%) - according to Harsh Mohan textbook of pathology, the causes like exposure to polluted area, smoking etc ultimately leads to chronic bronchitis or other COPD diseases. In Ayurveda Raja and Dhooma are the most important nidana which causes the dusthi of pranavahasrotas.

Diwaswapna (10%) And Ratrijagarana (30%) - These two nidana causes increase of kapha dosha in the body, along with other nidana causes the disease.

Vegavarodha (30%) Vega udeerana (27%) - These two nidana causes increase Vata prakopa, this Vataprakopa along with other nidana causes the disease.

The effect of the treatment was assessed by willcoxonsigned rank test.

The effect of Pushkaradi kwatha in main complaints like kasavega, kapha nishteevana, and sputum shows statistically significant results after 15th, 22nd, and 28th days of treatment. The effect of treatment shows statistically significant result in Peenasa after 22nd and 28th days of treatment. There was a statistically highly significant change seen in Katakandu after 15th, 22nd, and 28th days of treatment. The effect on Aruchi was statistically significant after 22nd day and highly significant after 28th days of treatment.

There was a statistically significant effect in Aruchi after 22nd day and highly significant result after 28th day of treatment. The effect of treatment on Swarabheda showed statistically significant effect after

15th day and highly significant result after 22nd and 28th days of treatment. There was highly significant effect on disturbance in sleep on 15th, 22nd, and 28th days of treatment. There was a statistically significant change in added sounds and PEFR after 15th day of treatment and highly significant change after 22nd and 28th day of treatment.

Statistical analysis cannot be done for kapha sampoorana gauravam since only four patients had that symptom.

Samprapti Vighatana of Kaphaja Kasa

Vigatana means destruction or breaking up. Breaking the process of development of the disease is called samprapti vighatana.

Pushkaradi kwatha is a drug mentioned in Cakradattakasa chikitsa adyayam, it contains katu, tikta rasa pradanaushnaveerya drugs like Pushkaramoola, Katphala, Bharangi, Pippali and Sunti. These drugs also kaphavatahara and kasahara properties. Studies show that Katphala which is having bronchodilatory, antihistamine and anti inflammatory properties helps to reduce the inflammatory cells which likely to activate the afferent limb of the cough reflex leading to cough. Other anti inflammatory drugs like Bharangi, Pippali, Sunti inhibits inflammatory mediators like interleukins, tumor necrosing factors etc. thus they reduce the mucosal edema and excessive mucosal secretions in the respiratory tract. Most of the drug in this kashaya are having bronchodilatory property, thus there was an improvement in PEFR and reduction in added sounds.

The katu- tiktapradana and ushnaveerya drugs in this kashaya helps in increasing the agni.

When the agni is increased the ama will get digested thus destroying the samprapti. The kaphahara and ushna properties of the drugs causes vilayana of kapha, and the avarana by kapha is also reduced causing proper movement of vata. Thus it reduces the sputum and kasavega. Since the obstruction is removed there will be improvement in PEFR and reduction in the added sounds.

On the basis of Pharmacological activity^{[7][8][9][10][11]}

- Anti inflammatory - Katphala, Bharangi. Reduces the hoarseness of voice. Reduces the inflammatory cells, interleukins thus reducing the mucosal secretions in the respiratory tract.
- Bronchodilatory activity (antiasthmatic) - Katphala, Bharangi, Sunti, Pushkaramoola, Pippali. Dilates the bronchus by increasing the resistance in the respiratory airway. Increases the airflow. Reduces the histamine induced bronchospasm.
- Antioxidant - Pippali, Bharangi. Reduces oxidative stress induced airway inflammation.
- Antitussive - Pippali. Reduces cough and expectoration by restraining the cough reflex.
- Antihistamine - Bharangi, Katphala. Reduces the histamine induced bronchospasm which is released during allergic reaction. (Figure 1)

CONCLUSION

The scientific study starts with identification of the problem, observation of phenomena, the formulation of a hypothesis concerning the phenomena, experimentation to test the hypothesis, and finally the development of a conclusion, that confirms, rejects, or modifies the hypothesis. Kaphaja kasa is one pranavahasrotodustijanitavyadhi where kasavega is associated with bahula, gana kapha. It is mainly due to the avarana

pathology of kapha and vata. It can be concluded that the highest incidence of kaphaja kasa was seen in patients who are exposed to nidanas like raja, dhooma, sheeta ,guru ,utkledi aharsevana, and vegaavrodha. Pushkaradi kwatha was found to be effective in reducing the subjective criterias of kaphaja kasalike productive cough, sputum, disturbance in sleep, rhinitis, and loss of appetite. It is very clear that Pushkaradi kwatha is indeed very effective in reducing the objective criteria. Therefore it can be concluded that Pushkaradi kwatha forms an excellent mean for the samprapti vigatana of kaphaja kasa.

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