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Review Article

A critical review on kasa (cough) in children

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ABSTRACT

In the *Ayurvedic* classics, *Kasa* (cough) is considered as an independent disease. It may also occur as *Lakshana* (symptom) or *Upadarava* (complication) in other diseases. It is an example of *Pranavaha Srotas Dushti Kasa* is common signs and symptom in the childhood, when mother and father see a doctor. It suggests that even after improvements in modern scientific science, coughs in children are not always treated effectively. According to *Acharya Charaka*, the *Moola* of *Pranavaha Srotas* is *Hridya* (brain, heart) and *Mahasrotas*. *Acharyas* have described definition, etiological factors, prodromal symptoms, types of *Kasa* along with all *Pathya* (wholesome) and *Apathya* (unwholesome) and therapeutic measures. *Kasa* is manifested with the vitiation of *Vata* and *Kapha*. Understanding and differentiating Kasa is important for its effective treatment. The study of *Kasa* is necessary as it can be associated with many complications if left untreated. In this context different *Lakshanas* (symptoms) of *Kasa* in children are explained by *Acharyas* which can be used for diagnosis as well as prognosis of the disease. Thus, with help of this study alternate safe methods of treatment in children can be employed. So, its identification as *Kasa* can be a ray of hope for the diagnosis.

Keywords: Kasa, Pathya Apathya, Pranavaha Srotas

INTRODUCTION

Kasa – *Kasa* phrase is derived from the root "*Kasri*" i.e. "*shabdakutsanyam"* which means "unpleasant sound". *Kasa* has been described as an independent disorder as well as symptom of many diseases and if neglected it may result in disease with poor prognostic condition. early on intervention is important in case of *Kasa* as it is a functionality *Nidanarthakara Vyadhi* (disorder itself grow to be causative element for extraordinary disorder) to offer *Kshaya* (depletion of physical tissues or *Dhatus*).[1] Cough can be correlated to the description of *Kasa* in *Ayurveda*. It is the most frequent symptom of respiratory disease.[2] In its acute form it is usually protective, but if it becomes chronic, impaired quality of life. It may be classified as productive or dry as well as acute subacute or chronic. The incidence of cough inside India is 5-10%.[3] It is the one of the mainly general present complaints 30% on the number one care setting.[4] It is likewise a general symptom of tuberculosis in India with an occurrence of 2.79 million.

Use of wood and coal, poor housing, cooking in open, hygienic condition, low living standard, are the cause for maximum respiratory infection in urban areas while in the urban areas contamination from industry and vehicle, tobacco, smoke, exposure to allergens have been connected with airway hyperactivity. The diagnostic evaluation of cough can be challenging for physicians because it is a disorder of respiratory system having broad differential diagnosis.[5]

MATERIALS AND METHODS

For this conceptual study various *Ayurveda Samhitas* – *Charaka Samhita, Sushruta Samhita, Astang Hridya, Madhav Nidana, Bhaishjya Ratnavali*, literatures and articles have been reviewed.

Paribhasha (definition)

Acharya Charaka define kasa as launch of obstructed *vayu* ensuing with inside the manufacturing unusual sound with inside the manner which can be effective or dry. *Chakrapanidutta* has commented at thephrase *Kasa* as in drawing of chest wall for the duration of coughing. *Acharya Sushruta* described kasa because the disorder related to a typical sound much like sound received from damaged bronze vessel.[7]

Nidana (etiological factor)

Nidana (etiology) of *Kasa* mentioned in the classics can be categorized as *Samanya* and *Vishesh Nidana*. *Samanya Nidana* mentioned by *Acharya Sushruta* and *Acharya Madhava* are *Dhoom(*smoke*)*, *Dhooli* dust, *Vyayama*, exercise, *Rukhsya Anna Sevan (*dry consumption*)*, *Bhojanvimargaman* (food route), and *Vishesh Nidana* (specfic cause*)*.[8,9]

Samanya Nidana- causative factor of cough

For the better understanding of the same, it can be grouped into the following.

Aharaja Nidana- dietary factors

Rukshannasevana- intake of dry food articles like *Shushka Shaka*, *Shushka Mamsa*, *Harenu*, bakery food items, junk and ready to eat foods will increase *Vatadosha*. Thus, resulting in production of metabolic waste which stimulates the cough center. *Guru*, *Snighdha*, *Madhura*, *Utkleshakaahara*, *Picchila* and *Abhishyandiaharas* like *Masha*, *Dadhi*, *Ikshuvikara*, *Navanna*, *Payasa*, jack fruit, and pizza will cause increase of *Kapha* and *Kleda Guna* and further result in *Kasa*. *Atikatu*, *Ushna*, *Amla Rasa Atisevana* intake of excessive pungent, hot and sour foods like *Dadhi*, *Amleeka* and spicy items will cause vitiation of *Pitta Dosha*. Atisheetha *Ahara Sevana* like intake of cold and frozen items like ice creams, milk shakes will cause vitiation of both *Kapha* and *Vata Dosha*, which causes stimulation of mast cells which releases histamines and resulting in broncho constriction and cough. *Alpaaharasevana*, *Anashana*, further aggravate the *Vata* and stimulate the cough center.

Viharaja Nidana – lifestyle factors

Diwaswapna (day sleep) cause *Kaphaprakopa*, *Rajasevana* means exposure to dust; *Dhoomopagatha* means exposure to irritant smoke. These dust particles and irritant smoke enters the respiratory tract through mouth and nose during the act of respiration. As a defense mechanism the mast cells in the respiratory tract gets stimulated and release histamines, which increases the secretion and produce *Kasa*. *Ratrijagarana* (night awakening), *Hasya* (excessive laugh), *Vyayama* (indulgence in heavy exercise) causes vitiation of *Vata Dosha* and stimulate cough center.

VISHESHA NIDANA OF KASA

Acharya Charaka mentions that the main *Nidanas* are *Guru* (heavy), *Abhishyandi*, *Madhura* (sweet), *Snigdha* (unctuous), *Swapna* (sleep) and *Vicheshtana* as *Vishesh Nidana* (specific etiology) of *Kaphaja Kasa*.[10] The main symptoms are *Shweta Kaphapravartana* (white productive cough), *Chardi* (vomiting), *Peenasa* (nasal congestion), *Mukhalepa* (coating over palate), *Sampurna Vaksha Miva* (fullness of chest), *Mandagni*, *Aruchi* (anorexia) and *Gaurava* (heaviness). [11]

Samprapti* of *Kasa

Acharya Charaka defined the *Samprapti* (pathogenesis) of *Kasa*. It is because of *Vata Prakopa*, downward movement of *Pranavayu* is obstructed and thus attains upward movement with *Udana Vayu* and localized in throat and chest. Obstruction at chest and neck region forces them to get filled up in the channels of head and neck. After that sudden extension or jerky movement in areas of *Hanu* (temporomandibular joint), *Manya* (neck) and the whole body accompanied by contraction of thoracic cage and eyes leading to increase in the intrathoracic pressure, all directed towards glottis.

Then there is forceful expulsion of air because of the sudden opening of glottis producing a typical sound is called *Kasa* which is either dry due to absence of sputum or accompanied with sputum. In *Ashtanga Sangraha Acharya* explained that due to *Vata Prokopa*, *Apana Vayu* is obstructed and it attains upward movement.[12,13]

Samprapti Ghataka (pathological factor)

Dosha: *Vaat + Kapha*, *Dushya*: *Ras*, *Anna*, *Srotas*: *Rasvaha + Pranavaha*, *Srotodusti Lakshna*: *Sanga*, *Adhisthana*: *Ama- Pakwashayotha*, *Pranavahasrotas*, *Ura-Kantha*, *Swabhava* (nature*): Aashukari* (acute*)*, and *Agnidusti (vition of digestive): Agnimandhya* (indigestion).

Purvaroopa

Acharya Charaka mentioned *Shooka Poorna Gal Asya* (sensation of in throat and mouth), *Kanthe Kandu* (itching in throat), *Bhojyanam Avarodh* (obstruction to the normal flow of food).[14]

In addition to these *Purvaroopa* (premonitary symptoms), *Sushruth* has mentioned *Kanth Kandu*, *Bhojanavrodha*, *Gala Talu Lepa* (coating in the throat and palate), *Arochaka* (anorexia), *Swasabda Vaishmya* (hoarseness of voice), and *Agnisada* (reduced appetite).[15]

Types of *Kasa* (according to *Brihatrayee* and *Laghutrayee*): *Vataj Kasa*, *Pittaj Kasa*, *Kaphaj Kasa*, *Kshaja Kasa*, and *Kshtaja Kasa*, *Kshtaja Kasa* are produced by aggravation of all of the 3 doshas.

Roopa (symptoms)

The actual signs and symptoms of the disease are only seen in the *vyaktaavastha* between the various stages of pathogenesis. *Roopa* encompasses both the signs and symptoms of the disease. The disease can be diagnosed and confirmed with the help of *Roopa*.[16,17]

CHIKITSA OF KASA (TREATMENT OF COUGH)

Treatment of *Kasa* in children is not discussed in detail, but various *Acharyas* have provided a detailed description of the line of treatment of individual *Kasa* variants in adults. Based on *Rogi* and *Rogabala*, it is necessary to determine the method of treatment in children. Although *Shodhana* (alleviation) and *Shamana* (elimination) therapies are mentioned for *Kasa Roga* in adults, it is advisable to adopt the *Shamana* treatment line in children with *Kasa* unless the condition warrants *Shodhana*. Avoiding the causative factors is always the first line of treatment. Planned according to the involvement of *Doshic*.[18] *Nidan Parimarjana* (avoidance of causative factor) – first line of treatment is to avoid the causative factor. If the precipitating factors are not avoided, the *Doshas* involve in the pathogenesis will further be aggravated and the prognosis will be worse. In treatment of *Kasa*, avoidance of causative factors plays a very important role. The *Chikitsa* of *Kasa Vyadhi* can be done by mean of *Shodhan* and *Shaman Chikitsa*. *Acharyas* mentioned general guidelines which state that the predominant *Dosha* should be identified first and treated initially. *Acharyas* mentioned *Snehan (*oleation therapy*)*, *Swedan* (sudation therapy*)*, Basti (enema), *Virechan* (therapeutic purgation*)*, *Vaman* (therapeutic emesis), *Dhumapana* (herbal smoke inhalation*)* and *Sarsarjana Krama* (post-treatment schedules) after *Shodhan Upakrama* (like Vamana/Virechana) for *Kasa* according to *Dosha* predominance. Internal medicine ought to be selected from massive series of formulations in classics after thinking about Roga-Rogi Bala and Samprapti of the disease.

Table 1: Showing *Roopa* of *Kasa*.

Vataj Kasa	*Pittaj Kasa*	*Kaphaj Kasa*
***Hridayashoola* (chest pain)**	*Mukha-kantha Shushka* (dryness of mouth and throat)	*Nisthivateghanam Kapha* (secretion of sticky mucous)
***Murdhashoola* (headache)**	*Jwara* (fever)	*Kanthe Kandu* (itching in throat)
***Parshwashoola* (pain in flanks)**	*Aruchi* (anorexia)	*Utklesh* (nausea)
***Udarshoola* (abdominal pain)**	*Chardi* (vomiting)	*Peenasa* (coryza)
***Shankhashoola* (pain in temporal region)**	*Urovidah* (burning in chest)	*Murdhashoola* (headache)
***Kasatishushkamev* (dry cough)**	*Pandu* (anaemia)	*Mandagni* (indigestion)
***Prasaktvegastu* (continuous bouts of cough)**	*Pitta Nisthivan* (yellow sputum)	*Guruta* (heaviness in body)
***Bhinnaswara* (hoarseness of voice)**	*Trishna* (thirst)	*Vaman* (vomiting)
***Ksheena Bala* (loss of strength)**	*Bhrama* (vertigo)	

Table 2: *Shamanaushadhi* for *Kasa*.[19]

Kalpana	*Vataja*	*Pittaja*	*Kaphaja*
Choorna	*Dhanyadhi Choorna (B.N.R)* *Hingwadi Choorna (B.R)*	*Chitrakadi Choorna (B.P)*	*Yavaksharadi Choorna(C.S.)*
	Pathyadi Choorna (B.R)	*Drakshadi Pippalyadi (Y.R.)*	*Panchakoladi Choorna (B.R)*
	Vidangadi Choorna (C.S)	*Pipalyadi Choorna(B.R)*	*TalisadiChoorna (B.R)*
Ghrita* and *Taila	*Kantakaryadi Ghrita (C.D)*	*Karanjadi Ghrita (B.R)*	*Dashamuladi Ghrita (Y.R)*
	Pippalyadi Ghrita (Y.R)		*Kantakaryadi Grita (Y.R)*
	Rasna Ghrita (C.S.)		*Kulathadhi Ghrita (C.S)*
	Vyoshadi Ghrita (Y.R)		
Vati/ Swarasa Kshreera and Kwatha	*Eladi Gutika (B.R)*	*Bhagottara Vati (Y.R)*	*Kantakaryadi Kwatha (B.R.)*
	Dashamula Kwatha (Y.R)	*Gudadi Gutika (Sh.S.)*	*Kaphaghna Vati (B.N.R)*
	Panchakola Ksheera (C.D.)	*Karjuradi Vati (R.S.S.Y.S.)*	*Katphaladi Kwatha (C.S)*
	Shrangavera Swarsa (B.R)	*Panchakoladi Kwatha (Y.R)*	*Lavangadhi Vati (V.J)*
		Tintidipatra Kwatha (B.R.)	*Marichadi Gutika (Y.R)*
		Vasa Swarsa (B.R)	*Pippalyadi Kwatha (B.R.)*
			Pushkaradi Kwatha (C.D.)

Upashaya and Anupashaya: relieving and non-relieving

Upshaya (relieving factors), *Anupshaya* (non-relieving factors) are helpful in diagnosing the diseases. In the context of *Kasa* (cough), *Upashaya* and *Anupashayas* are not told by the ancient *Acharyas*. It can be understood that the *Nidana* (etiology) of *Vataj Kasa* which are *Rooksha*, *Sheeta* and *Laghu* - *Ahara*, *Vihara* and *Aushadha* will be *Anupashaya* and opposite (*Snigdha*, *Ushna* and *Guru*) will be *Upashaya* for *Vataja Kasa*. Same as *Snigdha*, *Ushna* and *Laghu* - *Ahara*, *Vihara* and *Aushadha* will be *Anupashaya* and opposite of it (*Rooksha*, *Sheeta* and *Guru*) will be *Upashaya* for *Pittaja Kasa*. Also, *Snigdha*, *Sheeta* and *Guru-Ahara*, *Vihara* and *Aushadha* will be *Anupashaya* and opposite (*Rooksha*, *Ushna* and *Laghu*) will be *Upashaya* for *Kaphaja Kasa*.[20]

Updrava: complication

In the context of *Nidanarthakara Roga* (disease itself becomes causative factor for other disease), *Acharya Charaka* has mentioned that untreated or partially treated *Kasa* will produce *Kshaya* (depletion of bodily tissues or *Dhatus*).[21]

When due to lack of proper treatment or low immunity of the patient one disease leads to advancement of another one then it is called as *Nidanarthakara Roga*.[22] It is mentioned in *Ashtanga Hridaya* that if *Kasa* is neglected then leads to *Shwasa* (dyspnoea), *Kshaya*, *Chardi* (therapeutic emesis) and *Swarabheda* .[23]

Ashtanga Sangraha mentioned that *Kasa* leads to *Varna* (complexion), *Oja* (*Sara* or essence of all *Dhatus*), *Bala* (strength) and *Mamsa Kshaya* (depletion or decrease of *Mansa Dhatu*).[24] In *Bhavaprakasha*, it is explained that, it can lead to *Upadravas* (complications) like *Jwara* (fever), *Arochaka* (anorexia), *Shwasa* (dyspnoea), *Swarabheda* (hoarseness of voice) and *Kshaya* (depletion of bodily tissues or *Dhatus*.[25]

So, from all of the above we are able to say that early intervention is important in case of *Kasa* (cough) as it's miles a capability to provide diverse *Updravyas* and additionally *Vyadhi* (disease) like *Kshaya* (depletion of physical tissues or Dhatu).

Sadhya Asadhyata: Curable and uncurable

In *Ayurveda*, diseases that can be cured are often referred to as *Sadhya* (curable). *Asadhya* (uncurable), as the name suggests is exactly opposite to *Sadhya* (curable). According to *Acharya Charaka* - All the *Doshaja Kasa* are *Sadhya* (curable) because they are due to single *Dosha*. If *Kasa* is present in aged person then it is said to be *Yapya*. *Yapya* is type of *Asadhya*, in which the treatments applied afford relief to the patient, but within a short span, relapse again.[26]

***Apathya Aahara Vihara* wholesome and unwholesome.[27]**

Table 3: Showing Apathya Aahara and Vihara.

Apathya Aahara	*Vihara*
Vaataj Kasa	
Kashaya, Katu, Tikta Rasa, Laghu, Rooksha	*AtiVyayama, Sheeta Jala Snana, Vegavidharana*
Pittaja Kasa	
Katu, Amla, Lavanaa Ushna, Vidahi	*Ushna Kale Aatapsevana*
Kaphaja Kasa	
Madhura, Amla, Lavana, Snigdha, Guru	*Divaswapna, Asyasukham*

DISCUSSION

A Kidsat College, going age organization have become more likely to be troubled with the aid of using the cough which capacity be due to publicity to out of doors environment and get in touch with polluted organization of youngsters. Male youngsters were greater with inside the examine thinking about that they have smaller air approaches for a given lung volume, this is independently inherited similarly to the truth that boys have a better incidence of respiratory infections in the course of childhood.[28] The class family can be seen as an affordable find due to their living environment, lack of private and social hygiene, and neglect.in the direction of fitness which provokes breathing infections. The equal turned into discovered with inside the study. All members had been correctly immunized as much as their age through routine vaccine, suggestive of the lack of relative a few of the ailment and immunization. As vaccine ehandiest stimulate unique immunity to ailment particular and that they may be no longer immediately related in preventing routine infections.[29] The diagnosis of *Kasa* (cough) is challenging as it can be present as both, i.e. *Pradhan Vyadhi* or *Updravya* of any disease. For diagnosis of any disease it is very important to have full knowledge about the *Nidana*, *Purvaroopa*, *Roopa*, *Samprapti* and *Samprapti Ghataka* of that disease. Method of diagnosis mainly depends upon the understanding of *Dosha* and *Dushya*. As *Charaka* said that *Kasa* is a potential *Nidanarthakara Vyadhi* (disease itself become causative factor for other disease) to produce *Kshaya*, from this we can understand that in its acute form it may be easily curable with the help of *Nidana Parivarjana* and by following *Pathya* (wholesome). But when it advances from acute form to chronic form it can leads to *Kshaya*, starting from depletion or *Kshaya* of *Dhatus* (damage or depletion of bodily tissues) takes place in the direction of their nourishment i.e. *Rasa* (plasma) then *Rakta* (blood) then *Mamsa* (muscle tissue) and so on and ultimately leads to depletion of all the *Dhatus* (bodily tissues). After understanding these aspects one can attempt to cure the disease. Also, by modification in food habit, and by following *Pathya* (wholesome) and avoiding

Apathya (unwholesome) in the primary stage of disease we can treat disease.[30]

Shringyadi leha it is *Ushna Veerya* which reduce the *Vata* and *Kapha*, which directly antagonize the *Sheeta Guna* of the *Vata* and *Kapha*. *Kapha* reduce at its own seat. Thus, result the vitiation of the *Kapha* is in control.[31] Chandramrita Rasa is herbomineral *Kharaliya Kalpa*, contains *Triphala*, *Trikatu*, *Marich Kajjalli Loha bhasma*, *Tankana*, and *Saindhava*. All these contents have special action on Respiratory system disorders.[32] *Indukanta Vati* antitussive action of the drug is comparable to that of *Kasahara Dashemani Vati*. *Madhu* and *Dashamoola* which have other *Shothahara* property act locally to improve the *Shotha* in *Kantha*.[33] *Shwasa Kasadi Gutika* The experiment medicine with its vata *Kaphahara* property might have modified the disease-causing properties of *Kapha* and reduced obstruction of channel of the body also facilitate normal actions of *Vata* which has reduced *Kasa Vega*.[34]

Devadarvyadi Yoga action of the drug might be due to the combined effect of all the drugs. *Kaphachedaka* (scrapping action) and *Kaphanisaraka* (break down of kapha) properties helps in mitigation of the *Vatadosha* and subsequently alleviates the disease *Kaphaja Kasa*.[35] *Vasa Avaleha* may work as *Rasayana* (rejuvenation) for the *Pranavaha Srotas* and also shows *Kapha Vatahara* effect.[36] *Vyaghri Haritaki* is effective in all three types of *Kasa*, *Vataja*, *Pittaja* and *Kaphajakasa* but has better effect in *Vatikakasa*. *Vyaghri Haritaki* does not have significant side effect.[37]

CONCLUSION

Kasa is a disturbing disease of *Pranavaha Srotas*, commonly observed in general practice. In *Ayurveda*, *Kasa* is mentioned as a separate *Vyadhi* and also as a symptom. *Kasa* also found as *Poorvarupa* and *Upadrava* in different diseases. It is manifested with the vitiation of *Vata* and *Kapha*. In this study *Kasa* is taken as a *Vyadhi*. As a symptom *Kasa* completely correlates with cough reflex but as disease, it cannot be correlated with any single respiratory disease in modern Medical science. Study of *Kasa* is necessary because if left untreated it can be associated with complications. The different *Lakshanas* of *Doshaja Kasa* explained by various *Acharyas* can be used for diagnosis as well as prognosis of the disease. By knowing the symptoms of *Doshaja Kasa* given in the classics we can easily treat patients having *Kasa* after understanding the *Dosha* vitiated. Also, modification in food habit, and by following *Pathya* and avoiding *Apathya* in the primary stage of *Kasa* can treat this disease. To treat it in early stage is important because if neglected it may result in disease with poor prognostic condition.

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