PATHOLOGICAL CONDITIONS OF PHARYNX (KANtha) - A REVIEW STUDY

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ABSTRACT

Objective – The objective of this review study is to enumerate pathological conditions at pharynx according to modern medicine and Ayurveda. Background -Pharynx, according to modern medicine is divided as naso pharynx, oro pharynx and laryngo pharynx or hypo pharynx. Inflammation of pharynx causes dysphagia that is difficulty in swallowing. This inflammation is not just limited to pharynx but also observed at tonsils, uvula, para pharyngeal spaces and retro pharyngeal spaces. The clinical examination of inflamed pharynx locally reveals formation of pseudo membrane. Depending upon the causative agent the color of throat and patches of exudates or fungi are observed and other systemic signs and symptoms are seen as per underlying disease. Pharyngitis could be an indication of both, lower and upper respiratory tract infections. Along with dysphagia, fever, headache, hoarseness of voice, itching and frequent thirst are experienced by patients. Sometimes loss of appetite, diarrhea is also observed. Considering Ayurvedic aspect of pharynx it is named as Gala or Kantha meaning throat. Gala is a part of Pranvahasrotasa and Annavahasrotasa. Any Dosha Dhatu Dushti locally or remotely, which causes discomfort at Kantha and Gala parshwa is broadly classified under Kanthagata Roga. The general symptoms in Gala Roga are Gala Shoola, Gala Shotha, Gilan Kashtata, Swarbhedala and Trishna. Involvement of Marma makes it untreatable or Asadhya Vyadhi. Conclusion - Pharyngitis of any reason could prove to be fatal if overlooked for longer duration.
Keywords: Pharyngitis, Kanthagataroga, Sankramakaroga.

INTRODUCTION

Incidence of pharyngitis is a quite common scenario in developing countries. It is very much dependent on socio economic residence difference, humid weather, immunity and population. Studies show pharyngitis is viral, bacterial or could be fungal. Pharyngitis is an inflammatory disorder of pharynx may be acute but with multiple episodes. When associated with acute infections there would be no dyspnoea, wheezing, rales or crepits on chest auscultation. Pharyngitis is chronically observed in carcinoma arising due to nicotine intake for long term, or ingestion of corrosive substances. General Symptoms of throat disease are pain, ulceration, strider or stertorous (noisy) breathing, dysphonia (hoarseness), dysphagia (difficulty in swallowing), a mass in the neck. On going through the classical texts and subtle description of Kanthagatarogas Ekvrinda and Vrinda are more compatible with pharyngitis while visualizing on the ground of clinical features. According to Acharya Sushruta seventeen Vyadhi are classified under Kanthagata Roga whereas Acharya Vagbhatta has described eighteen. This classification is based on site and shape of Shotha observed in Vyadhi. Clinically though pharyngitis is minute disease with not much of morbidity prevalence when only limited to pharynx acutely. But has squeal in terms of suppurrative complications seen with GAS pharyngitis include tonsillopharyngeal cellulitis or abscess, otitis media, sinusitis, necrotizing fasciitis, bacteraemia, meningitis, brain abscess, and jugular vein septic thrombophlebitis. Non-suppurative complications of GAS pharyngitis include acute rheumatic fever, post-streptococcal reactive arthritis, scarlet fever, streptococcal toxic shock syndrome, acute glomerulonephritis, and paediatric autoimmune neuropsychiatric disorder associated with group A streptococci. Causative agent of pharyngitis with exudates is diagnosed by throat culture. Though throat culture is not a frequent investigation asked in general practice but could prove to be useful for avoiding irrational use of antibiotics prescribed. Centor Criteria is useful for identifying bacterial pharyngitis. One clinical tool for prediction of GAS pharyngitis is the Centor criteria, a model of positive cultures consisting of four variables (tonsillar exudates, swollen tender anterior cervical nodes, lack of cough, and a history of fever).

Material and Methods

A review of, Laghutrayi and Bruhattrayi along with review articles. Search words used, Pranvaha Srotasa, Pharynx, Pharyngitis, Tundikeri, Nasocomial, Shwasa, Gala Roga, Kantharoga, Udanvayu, Larynx, Gilayu, Pratishyay, Rohini, Ekvrunda, Shataghn, Galaughu, hypersensitivities, inflammation of epiglottis, uvulitis, epidemiology, global burden of disease, mortality and morbidity.

Result

Anatomically pharynx is the part of throat behind the mouth and nasal cavity. Hence it is a common passage of respiratory system and digestive system. Further it continues and goes down to esophagus of digestive and larynx of respiratory system. Hence it is a site of infection as it is connected to nasal and buccal opening. (Figure 1)
being streptococcal. In chronic stage it is later, hypertrophic and atrophic.

Following are few of the causative agents of pharyngitis. Viral infections include –

Adenovirus- Adenovirus infection presents lymph node enlargement, but no erythema yet painful. It is a self-limiting disease and prevalent in immune-compromised children or adults. There is no vaccine available for it. Transmission of adenovirus can occur by aerosol droplets, fecal–oral transmission, and contaminated fomites.\[8\]

Epstein-Barr virus – Clinically presenting pharyngitis along with infectious mononucleosis, lymph nodes swelling with exudative tonsillitis, redness and swelling. It infects at least 90% of the population worldwide, the majority of whom have no recognizable illness.\[9\]

Herpes Simplex virus - Painful, shallow ulcers with red borders or vesicles on the soft palate, gums, lips, or buccal surface help distinguish herpes simplex from other causes. Fever and lymphadenopathy are frequent.\[10\]

Para-myxoviridae - Measles with peripheral eruptions. It is found in paediatric age group. Vaccination is available for Measles, yet the infection can occur with symptoms of fever, sore throat, boils or eruptions over skin.\[11\]

Rhinovirus- Common symptoms include rhino rhea, nasal congestion, sore throat, cough, headache, subjective fevers, and malaise. Two studies detected HRV in 0% and 2% of asymptomatic adults, although rates were higher in adult household members of HRV-infected children.\[12\]

Corona virus- The symptoms are usually fever, cough, sore throat, breathlessness, fatigue, malaise among others. The disease is mild in most people; in some (usually the elderly and those with co-morbidities), it may progress to pneumonia, acute respiratory distress syndrome (ARDS) and multi organ dysfunction.\[13\]

Respiratory Syncytial Virus- It affects younger age group. Infants present with constant clear rhino rhea, cough, sneezing, and fever, shortness of breath, wheezing, pharyngitis or respiratory distress. Cough and wheezing occur in 50% of infected children.\[14\]

Para-influenza virus- Para-influenza viruses are associated with both upper and lower respiratory tract disease in children and adults, and the spectrum of illness typically includes otitis media, pharyngitis, conjunctivitis, croup, tracheobronchitis, and pneumonia. Uncommon respiratory manifestations include apnea, bradycardia, parotitis, and respiratory distress syndrome.\[15\]

Bacterial causes –

Group Streptococcus pyogenes – It is observed in all age groups. Group A Streptococcus is the most common bacterial etiology of acute pharyngitis, only 30% of the children and 10% of the adults with sore throat are infected by GAS. Moreover, GAS pharyngitis is the only acute pharyngitis for which antibiotic therapy is definitely indicated, as it could prevent rheumatic fever, shorten the period of fever, toxicity and infection, and minimize local complications such as peritonsillar abscess, mastoiditis and sinusitis.\[5\]

Fusobacterium necrophorum - The classical presentation of invasive F. necrophorum infections includes the presence of a sore throat followed by a high fever and rigors, and is accompanied by cervical lymphadenopathy and generally occurs in previously healthy adolescent males.\[16\]

Diphtheria is an acute communicable disease caused by Corynebacterium diphtheria. It usually occurs in children and results information of yellowish grey pseudo membrane in the mucosa of nasopharynx, oropharynx, tonsils, larynx and trachea. Corynebacterium diphtheria elaborates and exotoxins that cause necrosis of the epithelium which is associated with abundant fibrinopurulent exudates resulting in the formation of pseudo membrane. Absorption of the exotoxins in the blood may lead to more distant injurious effects such as myocardial necrosis, polyneuritis, and parenchymal necrosis of the liver, kidney and adrenal.\[17\]

Other underlying conditions where pharyngitis is presenting symptom are as follows:

Submandibular space infections like Ludwig's angina and epiglottitis. This is a serious, acute streptococcal cellulitis involving the neck, tongue and back of the throat. The condition was more common in pre antibi-
otic error as a complication of compound fracture of the mandible and periapical infection of the Molars. The condition often approves fatal due to glottic oedema, asphyxia and severe toxemia.[17] Vincent's angina - Vincent's angina is a painful condition of throat characterized by local ulceration of the tonsils, mouth and pharynx. The causative organism is Vincent's bacillus. The condition may occur as an acute illness involving the tissues diffusely or as a chronic form consisting of ulceration of the tonsils.[17] Advanced pattern infections, like Parapharyngeal space infections for peritonsillar abscess. Peritonsillar abscess or Quincy occurs as a complication of acute tonsillitis. The causative organisms are staphylococcus or streptococcus which is associated with infection of the tonsils. The patient complains of acute pain in the throat, trismus, difficulty in speech and inability to swallow. The glands behind the angle of mandible are enlarged and tender. Besides the surgical management of the abscess, the patient is advised tonsillectomy because Quincy is frequently recurrent.[17] In Fungal infections it presents oral thrush of Candida albicans.[18] Noninfectious cause of pharyngitis is seen in case of frequent of acid reflux.

Tumours involving Pharynx

Nasopharyngeal angiofibroma
This is a peculiar tumour that occurs exclusively in adolescent males (10 to 20) years of age suggesting the role of testosterone hormone in its production. Though a benign tumor of the nasopharynx it may grow into para nasal sinuses, cheek and orbit but does not metastasize. [19]

Nasopharyngeal carcinoma.
Nasopharyngeal carcinoma is a common cancer in Southeast Asia, especially prevalent in people of Chinese descent under 45 years of age. Genetic susceptibility and role of Epstein -Barr virus is considered important factors in its etiology. In fact, EBV genome is found virtually in all cases of nasopharyngeal carcinoma. The primary tumor is generally small and undetected, while the metastatic deposits in the cervical lymph nodes may be large. [19]

Embryonal rhabdomyosarcoma.
Also termed as botryoid rhabdomyosarcoma, this is one of the common malignant tumors in children but can also occur in adults. The legend is highly cellular and mitotically active. Other locations include vagina, orbit, middle ear, oral cavity, retroperitoneum and bile duct. [19]

Malignant lymphoma.
The lymphoid tissue of the nasopharynx and tonsils may be the site of development of malignant lymphomas, which resemble similar tumors elsewhere in the body. [19] As per Ayurvedic literature, pharynx is a part of Kantha or Gala. According to Acharya Sushruta, Agni, Soma, Vayu, Satva, Raja, Tama and Panchendriya, the Vahan for transfer or conduction of transfer through all the structures of body is called Pranvaha srotasas. [20] Acharya Chakrapani indicates respiratory system should be considered as pranvaha srotasas. In Charak Samhita it is stated as GIT or Mahasrotasas, it is a principal organ or Moola of system. It is clinically observed that, when heart and GIT is disturbed respiratory symptom appears without fail. [21] Due to throat infections as the QALY i.e., the quality-adjusted life year (QALY) gained might vary depending on the particular health outcome considered parents strongly prefer to prevent GAS disease in children compared to vaccine adverse events. [22] From Charak Samhita and Sushruta Samhita, Tika and review articles, it is observed that Pranvaha and Annavahasrotasas are duly dependent. Course of Prana Vayu is descending and so is that of diet taken. Any Vaishamyata in diet and dietary habits causes Vikrut Gati of Prana Vayu, Pitta and Kledaka Kapha at Aamashay causing a disease. Due to this Pratilom Gati of Prana and Udana starts the relay of Samprapti and ultimately Urdhwagata Roga. Hence respiratory dysfunctions are seen. Pharynx is common passage of Annavaha and Pranvaha Srotasas. As per Dosha vitiation and Khavaigunya, Samprapti is followed and eventually disease is seated in the site. Galagata or Kanthagata Roga [23] [24] [25] [26] [27] as per Ayurvedic texts are as follows

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**Rohini** – According to Acharya Sushruta Vataja, Pittaja, Kaphaja, Sannipataja and Raktaja. According to Acharya Sharangdhara Vataja, Pittaja, Kaphaja, Sannipataja, Medoja and Raktaja. According to Vagbhatta, Vataja, Pittaja, Kaphaja and Sannipataja. Vataja Rohini- Clinically presenting Mansankuras, Kantha and Mukha-Shushkata and Hanu and Karna Vedna. According to Madhukosha it also presents Kampa, Vinaama, and Shthambha. It is described as Ashukari as it may cause death if untreated within 7 days.

Pittaja Rohini – Clinically presents Tivra Jwara, Da.ha and Shighrapaka. Mansankura spreads quickly, Along with Vedna, Lali, Sparashahtwa, Osha, Trishna, Moha and Kanthadhunayana. According to Acharya Bhoja if it remains untreated could cause death in 4 days whereas according to Acharya Yogaratnakara it could cause death in 5 days.

Kaphaja Rohini- It presents Mansankuras of Guru, Shitra, Pichila and Shweta Varna. These are Mandpaki. They cause Avrodha (obstruction) of Shwasamarga. According to Acharya Bhoja it may cause death if untreated for 3 days or more.

Raktaja Rohini – It clinically manifests Srotasa of reddish or blackish discoloration, has Vedna, and has Lakshanas of Pittaja Rohini.

Medoja Rohini – This type is only described by Acharya Sharangdhara. But it’s Lakshanas and Chikitsa is undefined.

Sannipatik Rohini- It is clinically presented by formation of Gambhirpaki Mansankuras which are Dhatugata and is Asadhy (untreatable) and presents Lakshanas from all Doshas.

Kanthashalook- According to Acharya Sushruta it is Kaphaja but according to Vagbhatta its Kaphapradhan presenting Shotha or Granthi of Grathit and Shhira type causing obstruction of Shwasamarga (airway). The pain is compared to that of thorn prick hence the name Kanthashalook. According to Acharya Sushruta it is Shastrasadhya (surgical removal). According to Acharya Vagbhatta it is Sadhya. It has no Upa-prakaras and the Mansankuras resemble Kamal Kanda.

Adhijiwha – It is a Kapahpradhan Raktaamubandhi Vyadhi seated at Jiwhha Moola and Jiwhhagra. According to Acharya Sushruta it is Sadhya in Aama-vastha and Asadhy in Pakawaavastha.

Valaya- According to Acharya Sushruta and Dalhana it is Kapahpradhan with Vistrutapakar, Unnata and Alpa Shothayukt Shotha. According to Acharya Vagbhatta it has Alpa Vedna. It is an Asadhya Vyadhi. Svaraghna or Swarha – It is been described by Acharya Sushruta, Dalhana and Vagbhatta as vitiation of Kapha causing Avrodha in Shwasamarga (airway obstruction) causing Timirdarshana (syncope or fainting) in case of Vata vitiation it causes Shushkata and Shaithilya at Kantha resulting into Bhinnaswara or Swarbhed. It is an Asadhya Vyadhi.

Balasa – According to Acharya Sushruta, vitiation of Kapha and Vata causes Shwasakruchrata (dyspnoea) in Kantha eventually leading to Vikruti at Hrudayadi Marma. Involvement of Marma makes it Asadhya.

Vrunda- According to Acharya Sushruta and Vagbhatta vitiation of Pitta Rakt at Gala Parshwa formation of Unnata, Gola and Tivra Vedna Shotha is observed. In case of Vedna it also has vitiation of Vata. It is a Sadhya Vyadh as per Acharya Vagbhatta and Asadhy as per Acharya Sushruta.

EkVrunda – According to Acharya Sushruta vitiation of Kapha Rakt at Kantha causes formation of Shotha of Unnata, Gola, Kathina, Paki or alpapaki with Kan. du. It is a Sadhya Vyadh.

Tundikeri – This is been only described by Acharya Vagbhatta as Kaphaja Vyadhi of Sadhya type. Due to vitiation of Kapha formation of Shotha is observed at Hanu of Karpasiphatannib (cotton seed shaped), Pichila and Kathina and Mandvedna lakshanas.

Shataghni – According to both Acharya Vagbhatta and Sushruta Shataghni in Tridoshaja Vyadhi of Asadhy type where in Shataghni located at Gala forms a Ghana(dense), Mansankuras and Unnata (elavated) Shotha which again obstructs the airway causing Trishna, Jwara and Shirashouldha. Shataghni is an artillery weapon which is destructive and so is the dis- ease; hence it is coined as Shataghni.

Gilayu- As described by Acharya Vagbhatta it presents Mansankuras of Pruthu Moola (large pedicle)
and Sakashta Uchwasa and difficulty in swallowing food. It is a Tridoshaja Vyadh and Aushadhi Sadhya. Acharya Sushruta differs as describing it as Amalasthimatra (Amala seed sized) Granthi, Sthira, Alpa Vedna. It causes Sataktamivashanam(obstruction of food). It presents due to vitiation of Kapha and Rakta. It can be treated by Chedana or Bhedhana (surgical removal).

Gala Vidradhi – Acharya Sushruta, Dalhana and Vagbhatta have described Gala Vidradhi as Asadhya Vyadh presenting Puyasadrush, Tivra Vednayukta and Tridoshaja Vyadh. In case of Pakotpati and other symptoms it eventually becomes Sannipatik Vidradhi.

Galaugha – According to Acharya Sushruta it is Kapha-Raktaja Vyadh with Aanthahya Dushti causing Shotha. According to Madhukosha, it also presents Jwara, Shirogaurav, Tandra and Lalasrava and causes Udana Vayu Dushti. It is an Asadhya Vyadh.

Swaraghna – Kapholipta at Kantha resulting into Maargaavrodh.

Maansataana- This Vyadh is described by Acharya Sushruta as, vitiation of all three Doshas causing Shotha which gradually increases in size, causing obstruction and hence fatal.

Vidaari – According to Acharya Sushruta it is caused due to vitiation of Pitta at Kantha causing Shotha with Daha, Toda and Aaraktavarnata. It may cause Paka and cause Mansa Darana or ulceration with foul odour. It is Asadhya.

Galarbuda – According to Acharya Vagbhatta it is seated at the junction between Jiwha and Kantha, presenting Shotha of Sthira, Lalavarna, without any Vedana and Apaki type. It is a Tridoshaja Vyadh and is Asadhya.

Galaganda- Acharya Vagbhatta has described it as vitiation of Vata, Kapha and Meda causing formation of small and large sized, Mushak vallamb at (bilobed shape of scrotum) Shotha limited to outer side.

Vatataja Galaganda - According to Acharya Sushruta and Vagbhatta it is described as Gala Shotha of Aaraktavarnata and Krushna Sira, along with Toda. It gradually increases in size and does not form Paka. If Pakottapatti develops, it causes Aruchi and Tulu and Gala Shosha. It is Sadhya type of Vyadh.

Kaphaja Galaganda- It is described by Acharya Sushruta and Vagbhatta, where in vitiation of Kapha causes Sthira, Twakvarni, Shitasparshi and Manda Vedna Yukta Shotha. It also shows lakshanas of Kandu, increases in size and rarely Paka is seen. Due to vitiation of Kapha it causes Mukhavirasta and Kapholipta at Mukha and Kantha. It is a Sadhya type of Vyadh.

Medoja Galaganda - According to Acharya Sushruta and Vagbhatta Medoja Galaganda is Snigdha, Mrudu, Pandurvarni and Durgandhi Yukta, Kandu Yukta without any Vedna. It has a small sized Moola (pedicle) and hangs in Kantha like an Alabu. It presents Snigdhayasata at mouth and hence causes noisy respiration and Aspshta Swara. It also shows lakshanas of Kaphaja Galaganda. It is Sadhya until one year of occurrence.

Asadhya Galaganda- A person who has Kruchraachavasantama (airway obstruction or dyspnoea), Mrudusarva Gatranama, a year-old symptom, Aruchi, Kshina, Bhinna Swara (hoarseness) is considered to be untreatable as described by Yogaratnakara.

**Importance of quick treatment in Kanthagata Roja.**

According to Acharya Vagbhatta, Kantharoga are seated in the passage or route of Prana vayu. Due Praamada if any such disease neglected, would cause obstruction in Shwasamarga and cause obstruction or constriction on esophageal walls. Hence in case of Kantha roga, a quick treatment approach is important. [28]

As recent pandemic, Covid -19 is a viral infection of respiratory tract. The causative agent is SARS-CoV-2. The pandemic originated in Wuhan, China in the year 2019. The novel CoV can be transmitted between humans via respiratory droplets. At the onset of the disease, the main manifestations of COVID-19 are fatigue, fever, dry cough, myalgia and dyspnoea, with less common symptoms being nasal congestion, headache, runny nose, sore throat, vomiting and diarrhoea. Severe patients often have dyspnoea and/or hypoxemia 1 week after onset, after which septic shock,
ARDS, difficult-to-correct metabolic acidosis, and coagulation dysfunction develop rapidly. Of note, severe and critical patients can also only present with a low fever, or even no obvious fever, and mild patients show only low fever, mild fatigue and no pneumonia. Clinically it manifested symptoms of pulmonary Pneumonia. A recent study showed that the enteric symptoms of COVID-19 pneumonia are associated with invaded ACE2-expressing enterocytes. 

DISCUSSION

According to modern medicine, pharyngitis is viral, bacterial, fungal or complication of some local infections. Though self-limiting it has various sequelae. Pharyngitis is a common clinical manifestation observed in viral, fungal and bacterial infections according to modern medicine. Erythema, exudation, white patches, dysphagia, hoarseness of voice are signs associated with it. Apart from infections pharynx, is common site for carcinoma. Pharyngeal cancer clinical features are lump for sore throat that does not heal, sore throat that goes away, dysphagia and change in voice, unusual bleeding, facial swelling or trouble in breathing. Pharynx or Gala is Sanchara Sthana of Prana in Urdhwa Jatragata region and thus plays vital role in passage of food and air, taste, sensation, deglutition. Also, it is a site of Waldeyer’s ring situated at naso pharynx which is a rich source of IgG, IgM, and IgA and works a defense mechanism. Course of Prana Vayu is descending and so is that of diet taken. Any Vaishamya in diet and dietary habits causes Vikrut Gati of Prana Vayu, Pitta and Kledaka Kapha at Aamashay causing a disease. Due to this Pratiloma Gati of Prana and Udana, a relay of Samprapti starts and ultimately Urdhwagata roga. Hence respiratory (Shwasoshwas) dysfunctions are seen.

CONCLUSION

It can be concluded that as per modern medicine, any contagious disease causing upper respiratory tract infection manifests pharyngitis as general symptom in acute phase. Pharyngitis when associated with lower respiratory tract infections like tuberculosis or pneumonia would present wheezing, dyspnoea, stridors, crepits or rales as per lung tissue involvement. It lies common in infants, children, and adult and geriatric age group. Depending upon the causative agent, its incubation and symptomatic duration, involvement of surrounding tissues or organs and multiple episodes may vary.

As pharyngitis is so commonly observed in society it is very much important to find its cause and further stop the spread of infective agent through aerosols or droplet nuclei. As many of the viral infections, out of which few are rarest, have no specific vaccine available, only symptomatic treatment is given. Hence personal hygiene, social distancing, hand sanitization and coughing and sneezing etiquettes should be followed by an individual. Prasangata, Gatra Sansparshata, Nishwasata, Sahbhajanata, Saha Shayanata, Vastra, Mala-Anulepanata as described as hetu in Sankrama-ka disease, which can be avoided to prevent spread of viral, fungal or bacterial pharyngitis.

Coming to ayurvedic point of view, Gala Roga are described to be caused by Dosha and Dhatu Dushhti. Hence Nidana Parivarjana should be followed. Kanth is one of the Marma, and Marmaghata is cause of death or Vaikalya. Prana and Udana Gati Dushhti cause frequent Kasotpatti, Gala, Shotha and eventually Svarbheda. So Gati of all DOSHAS should be maintained by following Dincharya, Ritucharya and Ahara Vidhi Visheshayatanas.
28. Dr.Ganeshk Krishna Garde, Saarth Vaghbhata Uttarsthana, Reprint 2009, Chapter 22 Versus 111,Chaukhamba Subharti Prakashan, Varanasi, P 422

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