**DISEASE REVIEW**

Chronic bronchitis is very elaborately described in contemporary medical literature. The authentic standard texts are taken as ‘aptopadesha’ for understanding the various aspects of the disease and its management; and an attempt has been made to understand this aaptopadesha with ayurvedic view point with the help of aaptopadesha, pratyakshya, anuman and yukti etc pramanas.

Chronic bronchitis is a pathological condition characterized by the chronic cough and excessive mucous secretion in the trachea bronchial tree. It is classified under the broader heading chronic obstructive pulmonary diseases (COPD) because of the core pathological process of the obstruction to the airflow which is not fully reversible. Chronic bronchitis can be included in COPD only in the stage when chronic airflow obstruction occurs.

The predominant symptom of productive cough and being a part of chronic obstructive pulmonary disease, it can be correlated with various diseased conditions like Kasa, Shwasa and Rajayakshma, mainly Kasa.

There are two hypotheses- Dutch hypothesis and British hypothesis, which also support that the Chronic bronchitis may have overlapping pathophysiologies of Kasa, Shwasa and Rajayakshma.

**Dutch hypothesis and British hypothesis**-

The considerable overlap between persons with asthma and those with COPD on airway responsiveness, airflow obstruction, and pulmonary symptoms led to the formulation of the Dutch hypothesis. This suggests that asthma, chronic bronchitis and emphysema are variations of the same basic disease, which is modulated by environmental and genetic factors to produce these pathologically distinct entities.

The alternative British hypothesis contends that asthma and COPD are fundamentally different diseases: Asthma is viewed as largely an allergic phenomenon, while COPD results from smoking-related inflammation and damage. Determination of the validity of the Dutch hypothesis vs. the British hypothesis awaits identification of the genetic predisposing factors for asthma and/or COPD, as well as the interactions between these postulated genetic factors and environmental risk factors.
COPD includes *chronic bronchitis*, a clinically defined condition with chronic cough and phlegm; *emphysema*, an anatomically defined condition characterized by destruction and enlargement of the lung alveoli; and *small airways disease*, a condition in which small bronchioles are narrowed.

Exacerbations and comorbidities contribute to the overall severity in individual patient.

**Prevalence:**

Chronic bronchitis is more common in middle aged males than in females. Approximately 20% of adult males & 5% of adult women are affected\(^1\).

Chronic obstructive pulmonary disease (COPD), hitherto under diagnosed in India, is now recognized in 4-10 per cent of adult male population of India and several other Asian countries.

The Regional COPD Working Group for 12 Asia Pacific Countries and Regions used a COPD prevalence model and estimated an overall prevalence rate of 6.3 per cent with a range from 3.5 to 6.7 per cent. The smoking associations with COPD were high from most countries *i.e.*, 2.65 in India, 2.57 in China and 2.12 in Japan. In a large, multicentric study from India, the population prevalence of COPD was 4.1 per cent of 35295 subjects with a male to female ratio of 1.56:1\(^2\).

COPD is the fourth leading cause of death and affects >16 million persons in the United States. COPD is also a disease of increasing public health importance around the world. GOLD (Global Initiative for Chronic Obstructive Lung Disease) estimates suggest that COPD will rise from the sixth to the third most common cause of death worldwide by 2020\(^3\).

**Brief Description of Chronic Bronchitis**

**Definition:**

Chronic bronchitis is defined by the American thoracic society in clinical terms as chronic cough and expectoration when other specific causes of cough can be excluded. Chronic means that the cough and expectoration have persisted for at least three months and this pattern has been repeated for at least two consecutive years. World Health Organization has given definition of the Chronic bronchitis as Non-neoplastic disorder of the structures or function of bronchi usually resulting from
prolonged or recurrent exposure to infectious or non-infectious irritants.

**Etiology:**

1) **Infection:** a) Result of acute bronchitis
   b) Infective focus in upper respiratory tract, the nasal sinuses or tonsils
   c) Infective focus in lungs, e.g. bronchiectasis, fibrosis or tuberculosis.

2) **Smoking:** particularly of cigarettes

3) **Air pollution:** due to industrial fumes and dust

4) **General illness:** which favors infection e.g. Obesity, alcoholism and chronic renal disease.

   The most important etiologic factor in the development of COPD is cigarette smoking. There is a direct relationship between the amount and the duration of cigarette smoking and the severity of the disease. Other causes include agents inhaled from occupational exposure, but without the effect of smoking appears to be relatively insignificant. COPD is rare in the non-smoking population.

**Other etiological factors of COPD are:**

- **Airway hyper-responsiveness:** Increased broncho-constriction in response to a variety of exogenous stimuli, including methacholine and histamine.

- **Respiratory Infections:** Risk factors for the development and progression of COPD.

- **Occupational exposure:** Exposure to dust, coal mining, cotton textiles etc.

- **Ambient air pollution:** Considered to be less important risk factor than the cigarette smoking.

- **Genetic factors:** Severe α1-antitrypsin (α1-AT) deficiency is a proven genetic risk factor for COPD.

**Etiology from Ayurvedic point of view:**

All the factors described in modern literature regarding Chronic bronchitis are acceptable in Ayurvedic parlance. But, the disease *Kasa*, which is nearest correlate with Chronic bronchitis, is critically analyzed, few additional important information regarding the etiological factors are found.

The classification of *Kasa* as *Kshayaja* and *Kshataja* in addition to the *doshika* varieties indicates that the symptom of *Kasa* can be manifested by the
pathophysiology of these three diseases viz. Kasa, Rajayakshma and Kshataksheena. So, the nidanas of three diseases can be, altogether, taken as the nidana of Kasa. Same is correct for Samprapti also.

The etiological factors (nidanas) are classified in different ways in Ayurveda. Hence, the nidanas of Chronic bronchitis can be classified as-

**Dosha Prakopaka**-
- Dosha prakopaka ahara-vihara
- Vega-vidharana
- Vishamashana
- Dhatukshaya (Anuloma and/ or pratiloma)
- Sahasa

**Dhatu pradushaka**-
- Smoking (active or passive)
- Pollution
- Allergy
- Recurrent chest infections (especially during childhood)
- Beeja dosha (α-1 antitrypsin deficiency)

It is worth noting that these categories of nidanas are not exclusive but are according to their prominent effect on dosha-prakopa or dhatu-pradushaka. In other words, these categories are mutually inclusive to some extent.

Considering all these, the pathophysiology of Chronic bronchitis can have a multiple routes. Hence, Chronic bronchitis can be classified based on etiological factors as follows-

**Dhatu-pradosha (Khavaigunya) janya Chronic bronchitis**-
- Due to smoking, pollution, occupational exposures, α-1 antitrypsin deficiency or recurrent chest infections etc.

**Dosha-prakopa janya Chronic bronchitis**-
- Chayarupa prakopa- due to doshaprakopaka (doshavriddhikara ahara vihara)
- Achayarupa prakopa- due to Vishamashana, Vega-vidharana, Dhatukshaya and urakshata

From the ayurvedic point of view, the Samprapti of the disease Kasa can be broadly classified in two categories-
1. **Chayarupa prakopajanya** (Doshaja- Vataja, Pittaja, Kaphaja, Dwandwaja, Tridoshaja)- here vitiation in *poshaka doshasa* takes place and the *samprapti* follows the *shatkriyakala*.

2. **Achayarupa prakopajanaya** (Kshayaja and kshataja)- here vitiation of *poshya doshas* takes place.

Both the *sampraptis* can be summarized as follows-

**Chayarupa prakopajanya samprapti** – the *hetu* vitiate the *doshas (poshaka)* and also produce *kha-vaiyunya* which results in *sthankashraya*. Depending on the *vitiated dosha*, manifestation of Vataja, Pittaja, Kaphaja etc Kasa takes place.

This stage can be taken as bronchitis. The disease may run into chronic course due to incomplete treatment and/or persistent *hetu sevana* and/or repeated episodes of the disease. This results in persistent *khavaigunya* with inflammatory changes in the respiratory system, thus, resulting into Chronic bronchitis (Flow Chart No.2.1).

**Flow Chart No. 2.1: Samprapti of Chayarupa prakopa (Dosha) Chronic bronchitis**
Achayarupa prakopajanya samprapti- the hetus (Vishamashana, Vega-dharana, Dhatukshaya and Urakshata) produce vitiation of poshya dosha and kha-vaigunya, which results in sthanashanshraya. The system becomes more susceptible for inflammation. In due course of time, this may directly manifest into Chronic bronchitis; or through acute bronchitis due to incomplete treatment and/or persistent hetu sevana and/or repeated episodes of the disease which results in persistent khavaigunya with inflammatory changes in the respiratory system (Flow Chart No. 2.2).

Flow Chart No. 2.2: Samprapti of Achayarupa prakopa (Kshyaja and Kshataja)

Chronic bronchitis
It may be noted that Vega-vidharana and Vishamashana or Dhatukshaya follow a specific samprapti which may lead to Kasa of various doshika lakshana according to the preexisting predominance of doshas (poshya doshas) in the body. So, it may be conceived that-

**Vega-vidharanajanya**-
- Vataja kasa
- Pittaja kasa
- Kaphaja kasa
- Dvandvaja kasa
- Tridoshaja kasa

Or

**Vishamashanajanya**-
- Vataja kasa
- Pittaja kasa
- Kaphaja kasa
- Dvandvaja kasa
- Tridoshaja kasa etc.

_Dhatu pradosha, khavaigunya and srotodusti_- these factors can be considered as provoking epigenetic responses which lead chain reaction leading to disease.

It may be worth noted that the etiological factors like Vishamashana, Vega-dharana, Dhatukshaya etc are not emphasized in the contemporary medical science. But, as discussed above, these may also play a vital role in the manifestation of the disease. And, if these are not considered as etiological factors then, of course, prevention of these can not be advised. Though, in the definition of Chronic bronchitis itself, by saying that “when other specific causes of cough can be excluded”, indirectly it has been accepted that there may exist other etiological factors which are unknown (or not acknowledged) till date. It can be suggested that the asamavayi karanas like vishamashana, vega-dharana, kshaya etc can fill this lacuna to some extent.

Many clinical research works have correlated the Chronic bronchitis with Kaphaja Kasa. This is due to productive cough being the main symptom of Chronic bronchitis.
Pathophysiology:

Chronic exposure to irritant results in chronic inflammation of the bronchial mucosa, which is the major cause of airway narrowing. The airways are further narrowed by hyperplasia of the bronchial mucous gland, hypertrophy of the smooth muscle within the bronchial walls, and an increase in the number of the goblet cells. These glands and cells produce an increased amount of mucous in response to chronic irritant exposure leading to plugging of the smaller airways. This is in addition to the reduced ciliary function that leads to reduction of the airways clearance and recurrent respiratory infection.

During inhalation, airways are pulled open by the surrounding air sacs, which allow the air to pass into the alveoli. On expiration, the airways normally become narrowed. When incomplete obstruction caused by secretion occurs, expiration become abnormal as airways take longer to empty and often collapse before full expiration has occurred that leads to trapping of air inside the lung leading to reduced expiratory flow rate and hyperinflation of the chest and an altered ventilation perfusion ratio.

Altered ventilation – perfusion ratio causes abnormalities of the partial pressure of the oxygen and carbon dioxide in arterial blood. In advanced stage of bronchitis, destruction of the alveolar capillary membrane may also be present. Increased pulmonary vascular resistance and caused by the capillary destruction and reflex vasoconstriction in the presence of the hypoxia and hypercapania result in right ventricular hypertrophy, or cor-pulmonale. Polycythemia, an increased in the amount of the circulating red blood cells, is another complication of the Chronic bronchitis.

Further aspects of Ayurveda

All the above description of pathophysiology may be summarized under the heading of *srotodusti hetu* and *srotodusti lakshanas*. Chronic exposure to the irritants resulting in the inflammation of the bronchial mucosa can be explained by the effect of *hetu* – ‘*dhatubhi viguna*’. The various changes resulting in the narrowing of the airways along with the hyperplasia of the bronchial mucous glands, hypertrophy of the smooth muscle within the bronchial walls, and an increase in the number of the
goblet cells are ‘Sirnam granthi’ srotas dusti. The production of increased amount of mucous is Atipravritti and plugging of the smaller airways is Sanga.

There may be addition discussion with the help of Yukti pramana in this regard. Respiratory system is Kaphasthana. Prakrut Kapha is essential to present in sufficient quantity so that the whole system can withstand the effect of the process of respiration. But, because the mucus cells are already inflamed or affected, they could not produce the mucus of desired quality. Now, the important point is, if the mucus produced is not of desired quality, then the quantity of mucus produced is further increased, so that the required amount of the desired ‘guna’ can be maintained in the system. For e.g. – the ‘snigdha’ guna is most essential guna required in the respiratory system to counteract or balance the ‘ruksha’ guna produced by the process of respiration. If the snigdhata in the mucus produced is less than the normal or desired level (due to the production of poor quality of mucus due to the damaged membrane, then the body tries to produce more quantity of mucus so that the ‘snigdhata’ desired in the system could be maintained). This is the samprapti behind the productive cough (atipravritti) in the response to the constant irritation of the bronchial tree with the etiopathological factors like smoking, pollution, chemical fumes, dust etc.

One more important pathophysiology resulting in similar process of production of hypo-quality is ‘improper digestion’ (at jatharagi level, dhatvagni level or bhutagni level). Vitiation in any of the ‘ahara parinamkara bhava’, ‘ahara vidhi visheshayatana’, ‘viruddha ahara’ etc can lead to the production of hypo-quality Kapha, eventually leading to excessive production of mucus. And, it is obvious that, if the above two pathophysiology goes hand to hand, this will add up to the situation.

Mucus, surfactant etc saumya and aapya bhava can also be taken as different forms of Kapha. When the Kapha is vitiated, the surfactants etc also get vitiated. This affects the process of ventilation, and this is responsible for the various symptoms related to hypoventilation.

The respiratory system and the cardiovascular systems are so much interdependent with each other to execute their functions. When the heart function is affected, it affects the lung functions and vice versa.
If the ahara rasa is not properly metabolized, then the pichchhil and manda guna of ama makes the flow of rasarakta sluggish which, in turn, add ups to the hypoventilation, manifesting in the various associated symptoms.

The end result of various obstructive pulmonary diseases is hypoventilation (may it be chronic bronchitis or may it be emphysema). Therefore, it can be easily understood that it affects all the factors which are responsible for proper ventilation. The ‘external respiration’ and the ‘internal respiration’ both are important for the proper ventilation of the tissues. The COPD affects the ‘external respiration’ while the other factors like ‘ama’ affects the ‘internal respiration’. (This can be understood by comparing it with the mechanism of type I and type II diabetes. In type I, production of Insulin is affected and in type II, peripheral utilization of Insulin is hampered. Not only this, the quality of Insulin is also affected.)

Having understood this, it is now clear that, even though, in contemporary medical science, Chronic bronchitis is considered as a disease of respiratory system and said to be a progressive disease, it can be better managed with ayurvedic principles if the inclusion of etiological factors like Vishamashana, Vega-vidharana etc are taken into account from the ayurvedic point of view.

Clinical presentation of Chronic bronchitis:
Symptoms:
1) **Cough**: constant paroxysmal, worst in winter or on exposure to cold winds or sudden change of temperature.
2) **Expectoration**: variable, may be little, thin, mucoid or thick or frothy, mucoid and sticky. May become mucopurulant during attacks of acute bronchitis in winter.
3) **Dyspnoea**: in advance cases, breathing becomes quick and wheezing present even at rest.
4) **Fever**: absent except in acute exacerbation.
5) **Hoemoptysis**: usually in the form of streaks of blood.
Signs:

a) **Built**- usually short and stocky.

b) **Cyanosis**- rarely with clubbing

c) **Signs of airway obstruction**- prolonged expiration, pursing of lips during expiration, contraction of expiratory muscles of respiration, fixation of scapulae by clamping the arms at the bedside, indrawing of supraclavicular fossae and intercostals spaces during inspiration, and jugular venous distension during expiration due to excessive swing of the intrathoracic pressure. Widespread wheez of variable pitch usually most marked in expiration. Crackles at the lung bases in patients with excessive bronchial secretions. Both wheezing and crackles may be altered in characteristic by coughing.

Investigations:

1) **Ventilator indices**- Reduced PEF and VC

2) **Chest radiograph**- may be normal. Infected episodes may produce patchy shadows of irregular distribution due to pneumonic consolidation and small linear fibrotic scarring may result.⁶

Chronic obstruction to the airway passage is the main manifestation that will produce a set of symptoms which depends on the degree of bronchial obstruction, course of illness, presence of complication. Main symptom is cough with expectoration for three months a year for not less than two consecutive years.

Productive cough usually after colds during winter season, which show steady increase in severity and duration with successive years until cough is present all the year round.

There after development of exertional breathlessness with morning cough and wheeze which is due to increased bronchial obstruction by the inflammatory pathology and repeated respiratory tract infection in the tracheo-bronchial tree and occasionally with chest pain. Breathlessness is aggravated due to various etiological factors such as infection, cigarette smoking, and atmospheric condition.
The nature of sputum may vary, it may be scanty, mucoid, tenacious, and if at all there is infective exacerbation, may present with blood streaks. Frank purulent sputum is indicative of the bacterial infection.

Apart from many of the symptoms cough, expectoration and dyspnoea are considered to be the triads of chronic bronchitis. All above symptoms will be in milder form in initial phase and exacerbation is mild and subside without causing loss of working hour. Later the exacerbation become severe and becomes febrile. As the disease progress the symptom free period between the exacerbations becomes shorter and exacerbations last longer. This progressive illness of respiratory tract may cause disability also.

**Diagnosis Chronic bronchitis**

Any clinical condition where one present with cough with sputum for more than three months for more than two consecutive years is considered to be chronic bronchitis but to be more precise its done on detailed history taking, thorough examination, respiratory questionnaire, and investigation including pulmonary function testing.

**Examination findings in chronic bronchitis**

Physical findings depend upon factors like the severity of the illness and the presence of complications like bronchopulmonary infection, pneumothorax, respiratory failure and chronic cor pulmonale, congestive heart failure.

Initially physical findings may be absent but with increasing airflow obstruction physical finding becomes evident, like initially shape of the chest will be normal as it turns into emphysema it becomes barrel shaped, on advancing course of illness movement of the chest is reduced on respiration, percussion in initial stage is not of any clinical significance unless it is with emphysema where hyper resonant chest is evident, auscultation reveals prolongation of the expiration with ronchi and rales when smaller tubes are involved.
Types of chronic bronchitis

This classification is based on the severity of the illness or the extent of involvement of the pathological changes, thus it can be classified into-

a) Simple Chronic bronchitis-

In this only a minimal pathological and functional changes can be observed, where in one can see the increased trachea-bronchial secretion. The WHO in 1961 considered Simple Chronic Bronchitis as chronic or recurrent increase in the volume of mucoid bronchial secretion sufficient to cause expectoration.

b) Mucopurulent Bronchitis

This kind of the Bronchitis is usually classified based on the persistent presentation of the chronic cough with mucopurulent nature of the sputum. This involves wider area of the trachea-bronchial tree in the pathological process.

c) Chronic obstructive bronchitis

This classification of the disease is based on the presentation of the pathological process involving the widespread narrowing of the tracheo bronchial tree with resistance to airflow causing reduced ventilation

Note: Thus over viewing this classification one can make out that these classifications imply the severity of the illness and ongoing pathology in the respiratory system.

Complication of chronic bronchitis:

- Respiratory insufficiency and failure
- Pulmonary emphysema.

Proper medical management and patient compliance in smoking cessation can positively influence the prognosis of chronic bronchitis

DIFFERENTIAL DIAGNOSIS

Even though chronic bronchitis is diagnosed basis of the history given depending on the cause and other manifesting features other subtypes of the chronic bronchitis has to be ruled out along with other progressive illnesses which may occur in later stages such as emphysema, bronchiectasis.

Mucopurulent Chronic Bronchitis:

This condition presents with the yellowish expectoration with other symptoms such as hyperhydrosis, fever, weakness, decreased work capacity, and investigation showing moderately increased ESR level and leucocyte level. The mucopurulent
bronchitis is followed by acute respiratory infection which is possible in already suffering chronic bronchitis case thus can be ruled out from the simple chronic bronchitis by analyzing above symptoms.

**Chronic Obstructive Chronic Bronchitis:**

This condition presents with low productive cough and sputum is difficult to expectorate. Due to obstruction in the airway patients present with breathlessness. The bronchial obstruction is progressive, as the airway limitation increases reduces the work capacity of the person. Due to impaired mucociliary mechanism the trachea bronchial secretion are difficult to expectorate. Lung volume also reduced. Thus it can be well differentiated from other two condition of chronic bronchitis.

**Bronchiectasis:**

The stagnation of the secretion of the tracheobronchial tree produces a spectrum of symptoms. It may be unilateral or bilateral involving a part of the lung or wider area. Due to stagnation of secretion there occurs putrefaction in bronchiectatic spaces which presents more copious sputum that too on changing posture followed by the episode of cough. Fever malaise can be seen due to inflammatory changes, due to the damage in the tracheobronchial tree patients also present with haemoptysis. Confirmation of the diagnosis can be made radiological which makes easy to rule out this condition.

**Pulmonary tuberculosis:**

Gradual onset of illness with tiredness, malaise, anorexia and loss of weight, with evening raise of temperature are the diagnostic features of the disease. Sputum may be mucoid, purulent or bloodstained. Confirmation is possible by the laboratory investigation with raised ESR level, leukocytosis, Sputum for AFB as Positive, Radiological changes showing the involvement of the upper lobes by the Ghons foci. Advanced condition can also present with signs of fibrosis, and cavitations. Thus with absence of all this, the condition can be ruled out.

**Bronchial asthma:**

The clinical differentiation of the bronchial asthma with COPD may be difficult, but typical symptoms comprise of wheeze, breathlessness and sensation of chest tightness may be episodic or persistent. Those with episodic variety will be asymptomatic between periods of acute exacerbation. Typical presentation of the
diurnal pattern with symptoms, more in early morning is diagnostic. The term nocturnal asthma emphasizes this. On investigating the morning dipping of peak expiratory flow is suggestive of the same. Absence of these helps in ruling out the condition\textsuperscript{10}.

Complication of Chronic Bronchitis

The initial form of bronchitis transforming into another that too the later forms like obstructive chronic bronchitis in which obstruction of the small bronchi, over distention of the alveoli and fibrotic changes which impairs the elastic recoil mechanism of the lung that is compensation of the lung compliance will lead to the development of the emphysema which is the commonest complication in chronic bronchitis. All these factors will affect the gaseous exchange mechanism in course of evolution; further causing local inflammation leading to respiratory distress arterial hypoxaemia and pulmonary hypertension which will subsequently lead to the right ventricular failure.

The former are the less prominent causes but on contrary later are the main causes of death in chronic bronchitis.

Some of the diseases which could complicate chronic bronchitis:

- Emphysema
- Cor pulmonale
- Pneumothorax
- Bronchiectasis
- Respiratory failure
- Right heart failure

Management of chronic bronchitis

Management principles\textsuperscript{11}:

1) \textbf{To remove the causes if possible}: air pollution, smoking, elimination of aerosol sprays such as deodorants, insecticides and hair sprays. Other preventive measures include early vaccination against common influenza virus strains. Pneumococcal polysaccharide vaccine should be given only once because of danger of immunologic reactions following repeated vaccination.

2) \textbf{To prevent acute exacerbations}: by avoiding overheated rooms, dampy and foggy places, stuffy clothing, overfeeding, smoking and too much alcohol. Long
term treatment with tetracycline group of drugs often produces improvement in patients who have purulent sputum.

3) **To try to arrest the progress of the chronic disease by-**
   a) **Increasing patients power of resistance**- by giving to debilitated persons abundance of butter, milk or cream, cheese and other fatty articles of diet. Weight reducing measures if obesity.
   b) **Physical methods**- regular exercise in fresh air and within limits of tolerance. Encouraging deep breathing and efficient clearance, coughing should follow a full inspiration. If economic condition permits, winter should be spent at warm resorts.

4) **To give the patient as much comfort as possible:**
   a) **Antitussives**- such as linctus codein, if dry cough
   b) **Mucolytics** and inhalation of medicated steam
   c) **Expectorants**- i) Ammonium salts, Bromohexine, or Guaiphenesin in mixture form ii) hot alkaline drink- compound sodium chloride mixture 15 ml, sipped in a cup of hot water first thing in the morning. This should be followed after 15 minutes by a systematic attempt to cough the bronchi clear of accumulated secretions.
   d) **Bronchodilator**- Orciprenaline sulphate or Ipratropium bromide as aerosol, or Salbutamol 2-4mg or Terbutaline 2.5-5mg tds by mouth or 0.5% by inhaler, or Theophylline orally
   e) **Antibiotics**- Clarithromycin or Co-amoxiclav for 7-14 days, a good index of response being clearing of infected sputum. Long term chemotherapy is not indicated and antibiotics should be started by the patient as soon as acute exacerbation occurs.
   f) **Corticosteroids**- may be given during bad spells with an antibiotic control of co-existing infection, or if patient is severely disabled.
   g) **Postural drainage**- in the patient who has copious purulent sputum.

**Treatment from ayurvedic point of view**

First of all, with all the respect to the allopathic view to the treatment, it is worth mentioning that whatever the difference in the philosophy of both the sciences, ultimately we are treating the same patient, with the same complaints. To diagnose...
from the point of view of one system and to treat with the point of view of another system needs an understanding and acceptance of the point of views of both the systems. In true sense, medicines don’t belong to any system, but the treatments do. Both systems do agree that every disease have its etiological factors, which should be understood, found and avoided. Without this it is not possible to cure any disease.

In this respect, with the discussion in the section of etiology, we found that there are few more etiological factors like Vishmashana, Veg-dharana, Dhatukshaya etc apart from what are mentioned in the contemporary medical science. These factors are in addition to the other factors responsible for the Dosha-prakopa in the body. Dosha prakopa factors, role of Vishamashana, Veg-dharana, Dhatukshaya etc in the pathophysiology of productive cough or Chronic bronchitis could only be understood by the ayurvedic point of view. Of course, research projects may be taken to find out and understand the role of these factors in the manifestation of disease to make it understand for the scientific community obsessed with data. But, till date, it is well elaborated in ayurvedic literature, and used successfully in the treatment of diseases with the ayurvedic point of view.

Having said so, it can be easily understood how important it is to understand all this. In Ayurveda, whole concept of treatment has been summarized as avoidance of etiological factors. Of course, here, the ‘nidana’ includes the Samavayi, Asamavayi and Nimitta karanas all together.

It is well known that the basic aim of the classification of a disease into various types is to reach to the planning of treatment of that type. In Allopathy, different things like antibiotics, mucolytics, expectorants, bronchodilators, anti-inflammatory, steroids etc are used as per their requirement. In Ayurveda, different set of procedures (including drugs) are used to tackle the different types of disease.

Also, from ayurvedic point of view, the Pranavaha srotasa is not just Respiratory system. As in Allopathy, the respiratory system and its functions are closely associated with the cardiovascular system and vise-a-verse; in Ayurveda, also influenced by the digestive system. Therefore, the Kasa is included in the Koshtagata roga. This makes us understand the manifestation of Kasa due to Vishamashana or Veg-dharana. And accordingly, at times, Annavaha srotasa is given more imporatance than Pranavaha srotasa while considering the treatment. Therefore,
Categorizing the same disease through different viewpoints (vidhi samprapti) helps us to choose the treatment procedures accordingly.

The complete treatment procedure may include Snehana (abhyantara and bahya), Basti, Vamana, Virechana, Dhoornapana etc. apart from the specific medicines and pathyapathya according to the type of Kasa (Chronic bronchitis).

### CHRONIC BRONCHITIS AS A LIFESTYLE DISEASE:

Though, Chronic bronchitis is not clearly mentioned as a lifestyle disorder, but it is obvious that the poor lifestyle also plays an important role in the manifestation of the disease and also the outcome of the management of the disease. Life style includes understanding of Dincharya, Ritucharya, code and conducts regarding food (ahara), code and conducts regarding sleep (nidra), code and conducts regarding sex (brahmacharya), shodhana therapy, rasayana therapy etc. This is a vast subject to discuss. The factors of ‘life style’ responsible for the manifestation of the disease may be different as per the life style of the individual patient. This is to be decided by the physician at the level of the individual case.

These, lifestyle factors like ajeerna bhojana, vega dharana, akala bhojana along with dosha-prakopaka ahara-vihara etc. are not discussed in contemporary science as much in detail as in Ayurveda. But the understanding of these factors in regard with the manifestation of the disease and the outcome of the management needs a great acknowledgement. This is an advantage of ayurvedic system of medicine in the management of any disorder by helping the patient to get rid of the possible lifestyles responsible.

This may be the reason why some people with smoking or other etiological factors get affected with COPD and not all. At the same time, the ‘quantum’ of etiological factors taken and the ‘quantum’ of signs and symptoms of a disease may not be proportionate due to the difference in the ‘quantum’ of the ‘life style’ related factors.

Smoking, pollution, dust, chemical fumes and allergic materials are dhatubhi: viguna – etiological factor of strotodusti. Similarly, ‘mithya ahara vihara’ is the etiological factor or the Chronic bronchitis through the route discussed above, and these factors are generally ‘dosha gunai: sama:’, as they are responsible for the vitiation of the doshas.
Smoking as Mithyayoga of Dhoomapana\textsuperscript{14}:

Smoking can be correlated with mithyayoga of Dhoomapana described under Dincharya\textsuperscript{15}. It is suppose to be done on regular basis to get rid of mala (Kapha) in the Pranavaha srotasa, produced in small quantities during normal physiological process of respiration. When mithyayoga and atiyoga of this (in the form of smoking) takes place, it affects the Pranavaha srotasa by the chronic irritation of the bronchi, resulting in the pathological changes of CB, which can lead to COPD.

\textit{Nidanarthakara roga}\textsuperscript{16}:

History of respiratory diseases especially pulmonary tuberculosis and recurrent respiratory tract infections leads to Kha-vaigunya and makes the system susceptible for inflammation with the minimal etiological factors.

\textbf{REVIEW OF PREVIOUS WORKS ON CHRONIC BRONCHITIS:}

Though many academic research works have been done on Kasa, only two works were found specifically done on the clinical condition of Chronic bronchitis. In one work done by Kakati S et.al, Vyaghriharitaki avaleha was used and found effective in Chronic bronchitis\textsuperscript{17} while in another work done by Deshmukh U P et.al, Kantakari avaleha was used and found effective in Chronic bronchitis\textsuperscript{18}. In both the works the clinical condition- Chronic bronchitis has been correlated with Kaphaja Kasa.
REFERENCES:

12. Cha. Su. 16/34.
15. Cha. Su. 5.