

## **BRONCHIAL ASTHMA – A REVIEW FROM AYURVEDIC PERSPECTIVE**

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### **ABSTRACT**

Bronchial asthma is a disease involving the diffuse inflammation of the airways presented with the complaints of breathlessness, cough, chest tightness and wheezing. It is caused by various variety of triggering factors. The outcome of these triggering factors is either reversible or irreversible broncho constriction. Severity of the disease may vary depending upon the duration of the symptoms, duration of the symptom free period, nature of the symptoms and associated symptoms. The diagnosis of the disease is based on thorough history, physical examination and pulmonary function tests. As per the fundamentals of Ayurveda, based on the clinical features of the disease, this is usually correlated with *Tamaka Swasa*. The following paper illustrates the hypothesis put forth based on the comparison of findings of bronchial asthma and the symptoms mentioned in Ayurveda.

**Keywords:** Bronchial asthma, *Tamaka Swasa*

### **INTRODUCTION**

Bronchial asthma is a disease afflicting the airways with diffuse inflammation with either reversible or irreversible nature. As per global initiative for asthma (GINA), asthma is defined as a chronic inflammatory disorder of airways which is associated with airway hyperresponsiveness<sup>1</sup>. Airway hyperresponsiveness refers to exaggerated bronchoconstrictor response to stimuli that have little or no effect in non-asthmatic subjects<sup>2</sup>. It leads to recurrent episodes of wheezing, breathlessness, chest tightness and coughing, particularly at night or early morning<sup>3</sup>. The aetiology of the disease is

considered to be multifactorial. The prevalence of bronchial asthma has increased in worldwide more than 45% since 1970s<sup>4</sup>. In the present days, the prevalence varies considerably within countries and between countries. It is more prevalent in the developed countries than developing countries wherein the industrialised life style is being adopted<sup>5</sup>. At present, this disease affects 4 – 7% of the people worldwide. The illness will be observed more frequently in males before puberty and more in females after puberty<sup>6</sup>. In India, the prevalence of the disease is found to be around 7%

with a range from 2% to 17% in different study populations<sup>7</sup>.

### Etiological factors

Etiological factors of bronchial asthma are of two folds inducing factors and triggering factors. Inducing factors induce bronchial asthma in susceptible individuals include genetic factors, obesity, viral infections in early

life, exposure to tobacco smoke. Whereas triggering factors provoke the symptoms of bronchial asthma in the individuals already having bronchial asthma which include allergens, vigorous exercise, viral infections etc. Among these factors, some factors act as both inducing and triggering factors<sup>8</sup>.

**Table 1:** Table showing the classification of inducing and triggering factors for bronchial asthma<sup>9</sup>

Inducing factors	Triggering factors
Atopic dermatitis	Allergen such as house dust mite, pollen, mold, animal dander, cockroaches
Maternal smoking during pregnancy or infancy	Environmental factors such as traffic pollution, sulphur di oxide, ozone, diesel particles
Rhino syncytial viral infection	Indoor air pollution such as cooking gas fumes, passive cigarette smoking, paint spray
Exposure to high concentration of allergens in infancy	Upper respiratory tract infection
	Drugs beta blockers and cholinergic drugs used for myasthenia gravis, prostaglandins 2 used for inducing abortion
	Food allergens – egg, milk and wheat
	Vigorous exercise
	Occupational exposure to chemicals such as nickel, wood dust, cotton dust, platinum, isocyanates, chrome
	Gastro oesophageal reflux

The above description simulates the description of *Utpadaka Hetu* and *Vyanjaka Hetu* as discussed in Ayurveda literatures. The word *Utpadaka Hetu* (inducing factor) refers to the actual causative factor responsible for the manifestation of the disease where as *Vyanjaka Hetu* (triggering factor) refers to the provocative factor responsible for the aggravation of the symptoms where in pathophysiology of the disease is dormant at that particular time<sup>10</sup>.

The causative factors responsible for the vitiation of *Vata* and *Kapha Dosha* are considered as *Utpadaka Hetu*<sup>11</sup>. Thus, diet which vitiates *Vata Dosha* such as *Katu*, *Tikta*, *Kashaya Rasa* dominant food substances and the diet which vitiates *Kapha Dosha* such as *Madhura*, *Amla* and *Lavana* dominant food substances are considered as *Utpadaka Hetu*<sup>12</sup>. The causative factors such as *Rajas*, *Dhuma*, *Vata*, *Sheeta sthana sevana*, *Sheeta Ambu Sevana*, *Vyayama*, *Pratishyaya*, *Dadhi*, *Jala-*

*jamamsa sevana*, *Anupamamsa Sevana* etc. are considered as *Vyanjaka Hetu*<sup>13</sup>.

### Pathology

Bronchial asthma is associated with a specific chronic inflammation of mucosa of lower airways. The airway mucosa is infiltrated with activated eosinophils and T lymphocytes and activation of mast cells. The degree of inflammation has nothing to do with the severity of the bronchial asthma. There will be thickening of the basement membrane due to subepithelial collagen deposition. The epithelium of the airways is often shed or friable, with reduced attachments to the airway wall and increased number of epithelial cells in the lumen. The airway wall may be thickened and oedematous in the severe form of asthma. Occlusion of the small airways may be present due to the presence of mucus plug, composed of mucosal glycoproteins secreted from goblet cells and plasma proteins from bronchial vessels. These pathological events are found in all airways, but do not extend to lung parenchyma. Small airway inflammation is found in severe form of bronchial asthma<sup>14</sup>.

In Ayurveda, scattered references are present regarding the pathogenesis of *Tamaka Swasa*. In one context, obstructed *Maruta in Pranavaha Srotas* due to the increased *Kapha* in the *Uras* is responsible for the manifestation of *Tamaka Swasa*. In this context, the obstructed *Maruta* refers to entrapped air in the lungs not the air of external environment. *Pranavaha Srotas* refers to the bronchospasm. *Urastha Kapha* blocking the *Pranavaha Srotas* refers to mucosal oedema. This mechanism explains the acute episode of onset of bronchial asthma<sup>15</sup>.

The next stage of *Tamaka Swasa* is there will be obstruction of *Pranavaha Srotas* manifests due to the occlusion of passages by vitiation of *Kapha*. This is responsible for the complete obstruction of *Vata*<sup>16</sup>.

In the third stage of *Tamaka Swasa*, first there will be *Pratiloma gati* of *Vayu* will be present. Inhaled air will be entrapped in the alveoli. This will be responsible for the contraction of muscles of *Griva* and *Shira*. There will be further vitiation of *Kapha* in *Pranavaha Srotas*<sup>17</sup>.

### Clinical features

Clinical features of bronchial asthma vary according to the stage of the disease in a particular individual. The characteristic symptoms of the disease are wheezing, breathlessness and cough. Symptoms are typically worse at night and patients will be awake in early morning hours. There will be increased production of sputum which is tenacious or difficult to expectorate. This disease is associated with increased ventilation and increased use of accessory muscles of respiration. The prodromal symptoms observed in this disease are itching under the chin, discomfort between scapulae and inexplicable fear. (The signs observed in bronchial asthma are expiratory and polyphonic rhonchi throughout the chest and there will be hyperinflation. The presence of hyperinflation can be predicted by the presence of barrel shaped or emphysematous chest<sup>18</sup>.

The following table shows the clinical symptoms of bronchial asthma and its interpretation based on fundamentals of Ayurveda.

**Table 2:** Symptoms of bronchial asthma and their interpretation in terms of *Tamaka Svasa Lakshana*

Symptom of bronchial <i>asthma</i>	Dosha dominance	Interpretation in Ayurveda <sup>19</sup>
Running nose	<i>Kapha</i>	<i>Pinasa</i>
Nasal blockage	<i>Kapha</i>	<i>Nasanaha</i>
Wheezing	<i>Kapha</i>	<i>Gurghuraka</i>
Breathing discomfort	<i>Kapha and Vata</i>	<i>Svasa</i>
Cough	<i>Vata and Kapha</i>	<i>Kasa</i>
Tenacious sputum	<i>Vata and Kapha</i>	<i>Shlemani Ucchamane Dukhitah</i>
Comfort after spitting the sputum	<i>Vata and Kapha</i>	<i>Tasya(shleshmasya) Vimokshante Tat kshane Sukham</i>
Hoarseness of voice	<i>Vata</i>	<i>Kantha Uddhwamsa</i>
Inability to speak	<i>Vata</i>	<i>Kricchra bhashana</i>
Disturbed sleep	<i>Vata</i>	<i>Shayane Nidra Na Labhate</i>
Orthopnea	<i>Vata</i>	<i>Asino Labhate Soukhyam</i>
Upward gaze	<i>Vata</i>	<i>Utchritaksha</i>
Sweating in the forehead	<i>Pitta</i>	<i>Lalata sveda</i>
Dryness of mouth	<i>Vata</i>	<i>Vishushkasya</i>
Frequent attacks	<i>Vata</i>	<i>Muhu svasa</i>

**Table 3:** *Samprapti Ghataka of Tamaka Svasa*

Factor of <i>Samprapti Ghataka</i> of the disease	Factor involved in the disease process
<i>Dosha</i>	<i>Vata Kapha Pradhana and Pitta Apradhana</i>
<i>Dushya</i>	<i>Rasa</i>
<i>Srotas</i>	<i>Pranavaha, Rasavaha Srotas</i>
<i>Srotodushti Prakara</i>	<i>Sanga, Vimargagamana</i>
<i>Agni</i>	<i>Jatharagni mandya, Rasa Dhatvagni mandya</i>
<i>Ama</i>	<i>Koshthastha and Dhatustha Ama</i>
<i>Udbhava Sthana</i>	<i>Pitta sthana</i>
<i>Sanchara Sthana</i>	<i>Sarvasharira</i>
<i>Vyakta Sthana</i>	<i>Uras</i>
<i>Vyadhyavastha</i>	<i>Kapha pradhana, Vata pradhana, Durbala and Balavan Rogi</i>
<i>Vyadhi Svabhava</i>	<i>Chirakari, Yapya</i>
<i>Vyadhi bheda</i>	<i>Adhyatmika, Doshabala Pravritta, Sharirika and Amashaya Samuttha Vikara</i>
<i>Rogamarga</i>	<i>Abhyantara</i>
<i>Sadhyasadhyata</i>	<i>Yapya</i>

Analysis of *Samprapti Ghataka of Tamaka Swasa*

**Dosha:** *Vata* and *Kapha* are the bioenergies responsible for the development of clinical

features of *Tamaka Swasa*, though *Pitta Dosha* is responsible for the initiation of the symptoms<sup>20</sup>. Among the *Lakshana* observed, running nose (*Pinasa*), wheezing (*Gurghura-*

ka) and nasal blockage (*Nasanaha*) are usually manifested due to the dominance of the *Kapha Dosha*; whereas hoarseness of voice (*Kantha Uddhwamsa*), inability to speak (*Kricchra Bhashana*), disturbed sleep (*Shayane Nidram Na Labhate*), orthopnoea (*Asino Labhate Soukhyam*), upward gaze (*Uchchritaksha*), dryness of mouth (*Vishushkasya*) are manifested due to the vitiation of *Vata Dosha* and clinical features such as cough, breathlessness are manifested due to the vitiation of both *Vata* and *Kapha Dosha*<sup>21</sup>.

**Dushya:** If we analyse the clinical features explained in the context of *Tamaka Swasa*, we can predict the involvement of *Rasa Dhatu* in the disease manifestation. *Pinasa* (running nose), *Nasanaha* (nasal blockage), *Gurghuraka* (wheezing), *Kasa* (cough with tenacious sputum), *Swasa* (breathing discomfort), the presence of *Kantha Uddhwamsa* (hoarseness of voice), *Kricchra Bhashana* (inability to speak), *Shayane Na Nidram Labhate* (disturbed sleep particularly at night), *Asino Labhate Soukhyam* (orthopnoea), *Uchchritaksha* (upward gaze) and *Vishushkasya* (dryness of mouth) are suggestive of involvement of *Rasa* in the progression of the disease<sup>22</sup>.

**Srotas:** By analysing the clinical features of *Tamaka Swasa*, it is evident that the involvement of *Pranavaha Srotas* is observed from the beginning till the complete manifestation of the disease. The presence of *Pinasa* (running nose), *Nasanaha* (nasal obstruction), *Gurghuraka* (wheezing), *Svasa* (breathing discomfort), *Kasa* (cough), *Shleshmani Amuchyamane Dukhita* (tenacious sputum comes with difficulty), *Kantha Uddhwamsa* (throat irritation), *Kricchra Bhashana* (inability to speak), *Shayane Nidram Na Labhate* (disturbed sleep due to breathing discomfort),

*Asino Soukhyam Labhate* (orthopnoea) are suggestive of the involvement of *Pranavaha Srotas*<sup>23</sup>. *Rasavaha Srotas* will be afflicted in association with *Pranavaha Srotas* as we observe the involvement of *Rasa Dhatu* in the course of the disease<sup>24</sup>.

**Srotodushti Prakara:** By analysing the clinical features of *Tamaka Swasa*, we can come to a hypothesis that *Sanga* and *Vimargagamana* will happen during the pathogenesis in the patient suffering from the illness. Inward movement of *Prana* is considered to be normal phenomenon in normal healthy individuals. This will be altered in the individuals which can be predicted by *Nasanaha* (nasal blockage), *Pinasa* (running nose) followed by *Gurghuraka* (wheezing). This will be further responsible for severe frequent episodes of *Kasa* (cough) with little tenacious sputum<sup>25,26</sup>.

**Agni:** As the disease is considered to be *Amashaya samuttha Vikara*, *Jatharagnimandya* can be predicted by the prodromal symptom *Anaha* (distension of abdomen)<sup>27</sup>. *Rasadhatvagni mandya* can be predicted as there will be involvement of *Hridaya* is possible in a patient of *Tamaka Swasa* in due course of time<sup>28</sup>.

**Ama:** As there is weak *Jatharagni* (digestive fire present in the alimentary canal), we are going to suspect the presence of *Ama* (improperly processed material) in the *Mahasrotas* (alimentary canal). Due to the weak *Rasa Dhatvagni* (weak digestive fire in the plasma tissue), we are going to suspect the presence of *Ama* (improperly processed materials) in *Rasa* (plasma tissue) as well<sup>29</sup>.

**Udbhava Sthana** (origin of the *Dosha* or bio-energy): This disease is considered to be *Nija Vikara* (disease caused due to endogenous factor) and *Samanyaja Vikara* (different *Dosha*

will be dominant from the onset till the complete manifestation of the disease in different stages). The word '*Udbhava Sthana*' refers to the site where in a particular *Dosha* is produced in the *Koshtha* (alimentary canal). This implies that the production of normal/ abnormal *Dosha* (bioenergy) starts in the *Koshtha* (alimentary canal). As per the fundamentals of Ayurveda, *Pitta Dosha* (bioenergy) will be produced in the *Amashaya* (stomach). Hence, *Udbhava Sthana* in this disease is *Amashaya* (stomach)<sup>30</sup>.

*Sanchara Sthana*: (area of movement of *Dosha*): The word '*Sanchara Sthana*' refers to area of the body where in vitiated *Dosha* (bioenergy) will move inside the body. In case of *Tamaka Swasa*, clinical features observed during the course of disease suggest the involvement of upper part of the body initially in the pathogenesis followed by whole body involvement. Hence, *Uras* (chest) is considered to be *Sanchara Sthana* (area of movement of *Dosha*) in *Tamaka Swasa*<sup>31</sup>.

*Vyakta Sthana* (part of the body full blown symptoms of the disease seen): In case of *Tamaka Swasa*, the clinical features are initially restricted to upper part of the body, particularly chest. Hence, *Uras* (chest) is considered to be *Vyakta Sthana* (parts of the body where full blown symptoms of the disease seen) in *Tamaka Swasa*<sup>32</sup>.

*Vyadhyavastha* (stage of the disease): Bronchial asthma is an episodic illness presented with onset of cough, breathless and wheezing in paroxysms. Though the disease is not a life-threatening illness, the patients show severe air hunger due to the blockage in the airways and the proper management. Hence *Vyadhyavastha* in this disease is *Ashukari* (producing serious complications)<sup>33</sup>. *Vyadhi bheda* (type of

the disease): As far as the types of disease based on fundamentals of Ayurveda are concerned, *Tamaka Swasa* is a *Adhyatmika Vikara* (disease manifests in the patient due to deeds done by self). Among the type of *Adhyatmika Vikara*, it is further classified under *Doshabala Pravritta Vikara* (disease manifests in the patient due to the dominance of the *Dosha* or bioenergy), *Sharirika Vikara* (disease related to the body) and *Amashayasamuttha Vikara* (disease having the origin in stomach)<sup>34</sup>. This type of classification will be helpful in determining the *Sadhyasadhyata* (prognosis) of the disease as well as planning line of treatment at a particular stage of the illness.

*Rogamarga* (course of the disease): The presenting complaints such as *Pinasa* (running nose), *Nasanaha* (blockage of nose), *Gurghuraka* (wheezing), *Kasa* associated with discomfort in bringing out *Shleshma* (cough with little tenacious sputum), *Svasa* associated with aggravation on going to bed at night time or early morning time (nocturnal dyspnoea), *Kantha Uddhwamsa* (hoarseness of voice), *Kricchra Bhashana* (inability to speak), *Utchritaksha* (upward gaze) are suggestive of the involvement of *Abhyantara Rogamarga*. The presence of *Vishushkasya* (dryness of mouth) is suggestive of involvement of *Abhyantara Rogamarga*. The presence of *Lalata Sveda* (sweating over forehead) implies the involvement of *Bahya Rogamarga*. Thus, during the progression of the disease, mainly *Abhyantara Rogamarga* will be involved<sup>35</sup>.

*Sadhyasadhyata* (prognosis): Several criteria are explained to determine the *Sadhyasadhyata* of any disease. Based on following factors, *Tamaka Swasa* is considered to be *Yapya Vikara* (disease which is manageable due to the appropriate management)<sup>36</sup>.

- First of all, based on onset of the disease, this disease is more common in any age group and is an episodic illness characterised by breathlessness, cough and polyphonic wheezing. This implies the disease is having the dominance of *Vata* and *Kapha Dosha* (bioenergy) during the progression of the disease.
- The disease is having the dominance of *Vata* and *Kapha Dosha* (bioenergy) from the commencement of disease till the complete manifestation of the disease.
- *Rasa Dhatu* (plasma tissue) is involved in the disease process during the progression of the disease.
- *Abhyantara* (internal pathway of the disease) *Rogamarga* is mainly involved in the progression of the disease. Though there is the association of the *Madhyama Rogamarga* in the progression of the disease.

## CONCLUSION

Bronchial asthma is an episodic illness of respiratory system manifests in any age group in both genders. In childhood, male children are more frequently suffering from female children in a ratio of 2:1. The individuals suffering from bronchial asthma are presented with airway hyper responsiveness, cough, breathlessness and wheezing. By observing the above clinical features, we can infer the involvement of *Vata* and *Kapha Dosha* in the pathogenesis of the disease in the *Pra-navaha* (channel involved in respiration) and *Rasavaha Srotas* (channel responsible for circulation) with the involvement of *Rasa Dhatu* (plasma tissue).

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