ORIGINAL RESEARCH PAPER
Volume-8 | Issue-11 | November - 2019 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

GASTRO-ESOPHAGEAL REFLUX DISEASE: A REVIEW FROM AYURVEDIC PERSPECTIVE

Ayurveda

Aparna Kumari Associate Professor, Department Of Kayachikitsa

Nitin Pandey* Professor, Department Of Kayachikitsa *Corresponding Author

Sanjiv Kr. Tripathi Associate Professor, Department Of Shalya Tantra

ABSTRACT

Gastroesophageal reflux disease (GERD) is one of the most prevalent gastrointestinal disorders. GERD is a specific clinical entity defined by the occurrence of gastroesophageal reflux through the lower esophageal sphincter (LES) into the esophagus or oropharynx to cause symptoms, injury to esophageal tissue, or both. The classical triad of symptoms is retrosternal burning pain (heart burn), epigastric pain (sometimes radiating through to the back) and regurgitation. Direct correlation of GERD in ayurvedic terminology is difficult. The conferment and *samprapti* with *dosha-dshya-sammurchhna* should be considered. Aggravated *Vata dosha* is responsible for causing *vishama gati* (motor abnormalities) in *Annavaha srotas* leading to deracination of *pitta* from its natural site. Difficulty in differential diagnosis exists between the conditions like *Amashayagata vata*, *Amlapitta*, *Pitta vriddhi*, *Sama-pitta*, *Vidagdhajirna.* This review will provide better understanding of etiopathogenesis, clinical approach for managing the patients through breaking the chain of pathogenesis (*samprapti vighatana*).

KEYWORDS

GERD, *Amashayagata Vata, Amlapitta.*

INTRODUCTION

GERD, as generally defined, is a common condition that results from the reflux of gastric material through the lower esophageal sphincter (LES) into the esophagus or oropharynx, causing symptoms and/or injury to esophageal tissue[1]. In western countries, GERD is the most common gastrointestinal disease. It is associated with a huge economic burden and decreased quality of life. In addition, GERD can be associated with worrisome complications such as strictures, Barrett's esophagus and rarely, esophageal adenocarcinoma[2]. GERD symptoms occur at least once a month in 44%, once a week in 20%, and daily in 7% of the adult US population[3]. GERD has traditionally been considered less common in Asian countries in comparison to western world. Recent studies indicate that its prevalence in India ranges between 8-20% which is comparable to that in the west. However, it is unclear if this represents a true increase in the prevalence or is the result of a better understanding of the disease symptoms, increased awareness of acid reflux, or the recent conduct of high quality epidemiological studies. Improved knowledge of the disease can result in an increased recognition of GERD; thereby causing an apparent increase in its prevalence. Nonetheless, the impact of adaptation of 'western diet and lifestyle', increasing obesity, reducing H. pylori frequency etc. on increase in prevalence of GERD cannot be ruled out[4]. While heartburn and acid regurgitation are the most commonly reported symptoms of GERD, they are not the only associated symptoms. Pathologic acid reflux can result in a wide spectrum of GERD clinical presentations, including dysphagia/odynophagia and noncardiac chest pain. Important extraesophageal symptoms include laryngitis, pharyngitis, chronic sinusitis, dental erosions, asthma, and chronic cough. Laryngeal or pulmonary symptoms, such as laryngitis, hoarseness, noncardiac chest pain, or asthma, can occur as a result of gastric acid reflux into the throat and vocal cords or down into the lungs[5].

AIMS AND OBJECTIVES

- To study the concept of GERD through ayurvedic perspective.
- To evaluate the treatment protocols of GERD as per *ayurveda.*

MATERIAL AND METHODS:

The classical ayurvedic texts and all the relevant universally accepted electronic databases were critically analyzed for better understanding of pathogenesis of GERD in ayurveda and proper approach to treatment by breaking the chain of pathogenetic events.

PATHOGENESIS AND PATHOPHYSIOLOGY:

Some degree of gastroesophageal reflux occurs normally in most individuals. GERD is thought to develop when a combination of conditions occurs to increase the presence of refluxed acid in the esophagus to pathologic levels. Aggressive mechanisms potentially harmful to the esophagus overwhelm protective mechanisms such as esophageal acid clearance and mucosal resistance, which normally help to maintain a physiologically balanced state. In this way, the pathogenesis of GERD is similar to that of other acid-secretory diseases, such as duodenal ulcer disease and gastric ulcer disease. Among the mechanisms thought to contribute to the development of GERD are transient lower esophageal sphincter relaxations(TLESRs) or decreased lower esophageal sphincter (LES) resting tone, impaired esophageal acid clearance, delayed gastric emptying, decreased salivation, and impaired tissue resistance. Normally, saliva can neutralize any residual acid coating the esophagus after a secondary peristaltic wave. Acid clearance is prolonged by a reduced salivary rate or by diminished salivary capacity to neutralize acid. Reduced salivation during, or immediately before, sleep accounts for markedly prolonged acid clearance times. Reduced esophageal acid clearance during sleep appears to be a major causative factor in serious forms of GERD[6].

AYURVEDIC INTERPRETATION OF GERD:

A common symptom is heartburn, which is a sensation of burning in the middle of the abdomen, middle of chest and behind the sternum. In ayurveda, the symptom of heart burn is described as *Hrit-kantha daha* and few comparable terminologies like *Amlika* (pain and burning sensation in retrosternal region and sour eructation), *vidaha* (burning sensation during digestion of food)and *paridaha* (burning sensation inside the body especially *mahasrotas* i.e. GI tract) are described in different frame of reference.

Hrit-kukshi-kantha daha symptom can occur secondary to the conditions of *Sleshma kshaya*[7], *Sama-pitta*[8],*Pittaja grahani*[9], *Urdhwaga amlapitta*[10], *Vidagdhajirna*[11], *Paittika shula*[12], *Pittavrita vata*[13], *Pttavrita prana vayu*[14] and *Pittavrita udana vayu*[15]. Another cardinal feature of GERD is acid regurgitation which in ayurvedic parlance described as *amlodgara.* The conditions in which this symptom is seen are:-

- *Dhumaamlodgara* (smoky and sour eructation) in *Vidagdhajirna*[16].
- *Tiktamlodgara* (bitter and sour eructation) in *Amlapitta*[17].
- *Puti-amlodgara* (foul smelling, sour eructation) in *Pittaja grahani*[18].
- *Tikta amlodgara* with *loha gandhi* (bitter and sour eructation with metallic taste) in *grahani*[19].

DOSHIKA PREDOMINANCE IN GERD.

VATA- It possesses *chala guna* and is responsible for the movements of all body entities and controls every action of body and its organs (*vayustantrayantradharah*)[20]. Though *pitta* and *kapha* are ascribed with independent actions, it is vata that provides momentum for their

actions. *Pitta* and *kapha* in their own locale can act or vitiate the *dhatu* but do not have ability of moving independently from one place to another vitiating the *dhatus*. The vitiated *vata* may manifests as *Sramsa* which is described as *saithilyam* (relaxation or looseness) or *kinchit- swa-sthana-chalanam* (slight movement from its own place), *Vyasa* which is defined as *vistara* (dilatation) or as *asankochatwam* (not contracting) or *Sada* which is defined as *anganam kriyaswa-samarthyam* (inability to perform work or function) or *daurbalya* (weakness)[21]. Here in GERD, vitiated vata cause sramsa i.e. either decreased tone of LES or Hiatus hernia, *Vyasa* refers to LES dysfunctioning, *Sada* may manifests as incompetence of LES or diminished peristaltic clearance of the gastric acid. Aggravated *vata* undergoes *Udavarta* i.e. *urdhwa gati* causing reflux of the *pitta* residing in *amashaya*.

PITTA- *Dhumaka, amlaka, vidaha, antardaha* are described as *pittaja nanatmaja vikara* by *Charaka*[22]. These symptoms are manifestated in upper abdomen, *hrit pradesh* (retrosternal region) and *kantha* (throat). The vitiated vata dosha may leads to deracination of *pitta* in *sama avastha* (equilibrium) from its site *Amashaya* especially *adhoga amashaya* to *urdhwa amashaya or annanalika* (oesophagus) when the kapha is ksheena by the pathological process of *Ashayapakarsha* or may reflux due to upward movement of *vata* (*udavarta*). In stage of *Prakopa pitta* tends to move from its site and in *Prasara* state it trespasses its own place as in *Amlapitta* and produces symptoms like *hrit-kantha daha*, *tikta-amlodgara* etc. *Urdhwa gati* (reflux) of *Pitta* causes *Shopha* in *annanalika* (Reflux esophagitis).

KAPHA- The symptom *Antardaha* is mentioned in *Sleshma kshaya. Kapha* helps in maintaining mucosal resistance against the corrosive action of gastric acid. Esophageal damage occurs when *pitta* dominates over the protecting *kapha* (the level of acid and pepsin present exceeds the level of mucosal protection). Also *vata* displaces *pitta* better in diminished status of *kapha*.

ROLE OF AGNI IN PATHOGENESIS OF GERD:

According to ayurveda, *Mandagni* is said to be the basic etiological factor for all the diseases. *Mandagni* cause stasis of semi-digested food in the *amashaya* for prolonged duration and hence causing delayed gastric emptying. The semi digested food i.e. *ama* in association with *pitta* produces the condition of *Sama-pitta*. This *sama piita* when tends to move upward through *amashaya*, produces symptoms of GERD. Delayed gastric emptying is present in 10% to 15% of patients with GERD. It is believed to contribute to the development of a small proportion of cases by increasing the amount of fluid available for reflux and by the associated constant gastric distention[23].

ETIOPATHOGENESIS OF GERD AS PER AYURVEDA:

GERD possesses multifactorial aetiology. The prime *dosha* involved in manifestation of GERD is *vata dosha*. Aggravation of *vata* mainly occurs in two different ways:

1) By *dhatukshaya* (by the diminution of tissue elements) and
2) By *margavarodha* (obstruction): *Margavarodha* in *Annavahasrotas* (scleroderma, gastric outlet obstruction, gastric stasis, neuromuscular disease, idiopathic gastroparesis, pyloric dysfunction, duodenal dysmotility etc.) leads to increased intragastric pressure causing GERD. Increased intragastric pressure leading to GERD can be caused by obesity, pregnancy, or disruption of the normal receptive relaxation of the stomach following an increase in gastric volume.

Beside this, any factors that lead to *Udawarta* (reverse movement of *vata*), *Agnimandya* and *Amla- pittta* can eventually precipitate GERD.

Table 1: Generalized Risk factors for GERD

Etiological factors	Vata aggravating factors[24]	Causative factors of *Udavarta*[25] (*urdhwa gati* of *vata*)	Causative factors of *Agnimandya*[26]	Causative factors of *Amlapitta*[27]
Aharaja nidana (dietary factors)	*Katu, tikta, kashaya rasa, laghu, ruksha, sheeta ahara, anashana* (starvation) etc.	*Vata* aggravating factors.	*Abhojana* (starving), *Atibhojana* (excessive food intake), *Vishamashana* (eating at irregullar time) , *Asatmya bhojana* (unwholesome food), *Adhyashan*a (eating before the last meal is fully digested), Consuming too much tea, coffee, alcohol and smoking.	*Viruddhahara* (incompatible foods), *Adhyasana* (taking meal frequently before digestion of previous), *Dushita ahara* (contaminated foods), *Paryushita ahara* (stale food), *Ati drava, amla, vidahi, ushna* and *Pitta prakopaka anna-pana, Apakwa madya, apkwa ksheera, Guru, abhishyandi, snigdha, pishtanna, Phanita, Kulattha.*
Viharaja (related to lifestyle)	Excessive indulgence in *bharavahana* (carrying heavy weights), *adhwa* (walking), *yana* (travelling) and *vichestana* (improper activities) and *vishama shareera* (improper postures), *vega dharana* (suppression of natural urges)	*Vegadharana* (Suppression of natural urges).	*Vegadharana* (Suppression of natural urges), *Swapnaviparyaya* (Loss of sleep at nights or sleeping during day), *Desha kala ritu viparyaya* (sudden variation in place, time and season).	Day time sleeping after taking meal, Bathing after having meal.
Manasika (psychogenic)	*Bhaya* (fear), *chinta* (worries), *shoka* (depression), *krodha*(anger) and *udvega* (anxiety)		Emotional disturbances like stress, grief, and anxiety.	*chinta* (anxiety), *shoka* (grief), *bhaya* (fear), *krodha* (anger)
Chikitsapacharaja (iatrogenic factors)	Excessive loss of *dhatus* during *Panchakarma* or *Raktamokshana*		Incompatibility of *panchkarma* procedures	*Atiswedana*
Vyadhi karshana (complication of other diseases)	*Dhatu kshaya* due to any chronic illness.		Complication of any chronic disease.	*Ajirna, Ama*

PATHOLOGICAL SPECTRUM OF GERD (ACCORDING TO AYURVEDA):

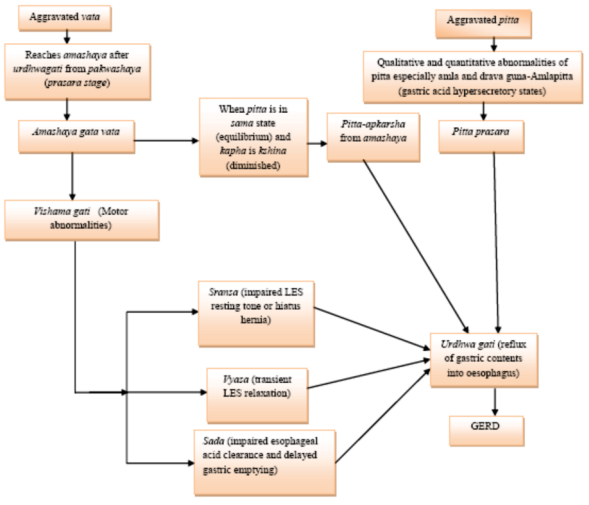

Fig 1: Pathogenesis of GERD.

CLINICAL SPECTRUM OF GERD:

AMASHAYA GATA VATA[28]-

Amashaya is site of kapha and pitta dosha , when vata gets aggravated at its original site (*pakwashaya*) abundantly, it trespass to the organs and tissues meant to be abodes of other doshas known as *Prasara*. During *Prasara*, when vata have *urdhwa gati*, it reaches to *Amashaya* and in presence of susceptible circumstances, and the condition is called *Amashaya gata vata.* Clinical manifestations of *Amashayagata vata* are- Pain in *hrit* (epigastric/retrosternal region), *nabhi* (umbilical region), *udara* (abdomen) and *parshwa* (pleural region), *trishna* (increased thirst), *udgara* (belching), *kasa* (cough), *swasa* (breathlessness), *kanthasyashosha* (dryness in mouth and throat).

AMLAPITTA[29]

The disease *Amlapitta* is a common functional disease of *Annavaha srotas.* Among the three *doshas*, *pitta* plays a key role for the genesis of *Amlapitta*. *Basavarajeyam* has included *Amlapitta* in the 24 *Nanatmaja Vikaras* of *Pitta*[30]. It is characterized clinically by symptoms like *avipaka* (indigestion), *klama* (fatigue), *utklesha* (nausea), *tiktamlodgara* (bitter and sour eructation), *gaurava* (feeling of heaviness in the body), *hrit-kantha-daha* (burning sensation in chest and throat) and *aruchi* (anorexia). Though the symptomatology of *amlapitta* is quite comparable to GERD, but its pathogenesis is discordant to that of the GERD. Increased *drava* and *amla guna* of *vidagdha pachaka pitta* plays an important role in the pathogenesis of *Amlapitta*. On this basis, it can be considered as gastric hypersecretory state (hyperchlorhydria) leading to gastritis. Gastric acid hypersecretory states increase the risk for peptic ulcer disease (PUD), gastroesophageal reflux disease (GERD) and gastrointestinal bleeding, and increase the morbidity and mortality related to these conditions[31]. Therefore *amlapitta* can be contemplated as secondary cause for GERD.

Table 2: Clinical manifestations of GERD

Clinical features of GERD	
Hrit-kantha-kukshi daha (Heart burn)	*Tiktamlodgara* (acid regurg itation)
Hritpida (non- cardiac chest pain)	Pain in abdomen and umbilical region.
Swasa (intermittent wheezing, asthma, bronchitis, aspiration or recurrent pneumonia, and interstitial fibrosis)	*Kasa* (chronic cough)
Tooth decay, gingivitis, halitosis, aphthous ulcer and water brash (due to *Pittapakarsha* to oral cavity caused by *vishama gati* of *vata*)	*Kanthasya shosha* due to aggravated vata and pittap akarsha causing laryn gitis, pharyngitis pro ducing hoar sness of voice, sore throat, Odynophagia and Dysphagia.
Parshwa pida (pain in pleural region)	

MANAGEMENT PROTOCOL FOR GERD:

1. *NIDANA PARIWARJANA*:-

Nidana pariwarjana remains the cornerstone of any therapeutic intervention which is commonly overlooked by physicians and not followed by patients.

- Dietary modifications- *Adhyasana* (frequently taking meal before digestion of previous), *atibhojana* (taking food in excess quantity), *guru*, *abhishyandi*, *vidahi,* tea, coffee, tobacco, alcohol, smoking, citrus juices, tomato products, chocolate, peppermint and high fat containing diet should be avoided.
- Lifestyle modification- *Vegadharana* (suppression of natural urges), daytime sleep just after taking meal and *Ratrijagarana* should be avoided.

2. *SHODHANA CHIKITSA –*

Susruta mentioned *Vamana* and Charaka mentioned *Virechana* in. therapy in management of *Amashayagata vata.* Both *Vamana* and *Virechana* help in purification of *Srotas* and *udbhava sthana* of the disease. Internal *Snehana* and *Swedana* should be prescribed prior to shodhana therapy aiming at improvement of oesophageal motility and LES tone by pacifying *Vata* and promoting *Vatanulomana. Virechana* is a ultimate procedure for elimination of *Pitta Dosha*. It is also capable of removing *kapha dosha* associated with *pitta dosha* or situated in *pitta sthana.* In addition to elimination of pitta, *virechana* clears the *annavaha* and *purishvaha srotas*, improves *agni* and promotes *Vatanulomana*. After the *shodana therapy* the residual *Dosha*s should be pacified by *Langhana* and *Laghu Bhojana* and by using the *Shamana* and *Pachana Aushadis.*

3. *SHAMANA CHIKITSA –*

- ***Doshapratyanika chikitsa***- It has been discussed, that urdhwa gati (reflux) of *pitta* from its site *amashaya*, oesophageal dysmotility and LES dysfunction is mainly due to *vata prakopa*, *Vatashamaka*/ *Vatanulomaka* should be the primary treatment in the GERD patients. *Haritaki churna*, *Hinguastaka churna*, *Dwiruttarhinguadi churna*, *Vaishwanara churna* with *Eranda taila* can be used for this purpose. These drugs also possess *deepana* and *pachana* properties. Along with *Vatashamaka*/*vatanulomana, Pittashamaka* drugs should also be given such as *Amalaki churna, Shatawari churna, Yastimadhu churna, Drakshadi churna, Panchanimba churna, Patoladi kwatham, Khandakushmand avleh, Shankha bhasma, Pravala pisti/bhasma, kamdudha ras* etc.
- ***Srotoshodhaka chikitsa***- The foremost treatment for *Annavaha srotodushti* is management of *Amadosha*, which includes *Langhana, Deepana and Pachana. Shunthi, Jiraka, Mustaka, Pippali, Ativisha, Haritaki Churna, Hinguastaka churna, Lavanbhaskara churna, Shankh vati, Chitrakadi vati* can be used for *Dipana* and *Pachana* purpose.
- ***Vyadhipratyanika chikitsa*** **(Treatment specific to the disease)**

Shaddharana churna
Avipattikara churna
Mulethi churna
Shatavari churna
Amalaki churna
Kamdudha rasa
Sutasekhara rasa
Lilavilasa rasa
Shatavari ghrita
Drakshadya dhrita
Pippali khanda
Khandakusmandavaleha

TREATMENT ALGORITHM OF GERD

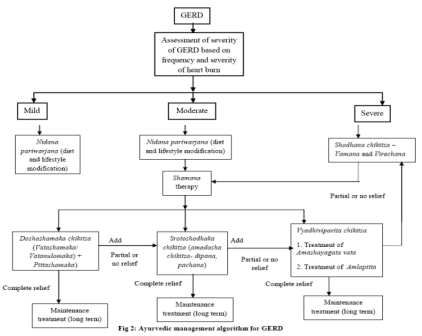

Fig 2: Ayurvedic management algorithm for GERD

CONCLUSION

Gastro-esophageal reflux disease is a persistent affliction of gastrointestinal tract upper part with the growing prevalence throughout the world. It occurs when acid or stomach content circulates backward into the esophagus. Direct correlation of GERD in ayurveda is arduous. Multiple factors are involved in causing *dosha-dushya-sammurchhna* leading to GERD which are *vata prakopa*, *udavarta* (*urdhwa gati*), *Pittapkarsha* from its site, Kapha kshaya, *agnimandya* and *amlapitta*. Therefore treatment should target *Vatashaman/Vatanulomana, Pitta shamaka, agnidipana, amapachana* and *shodhana* of *Srotas* by *vamana* and *virechana.*

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