



## Review Article

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### AN INQUISITIVE INSIGHT INTO THE PATHOPHYSIOLOGY AND MANAGEMENT OF GRAHANI ROGA

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#### ABSTRACT

Grahani roga has been a challenge owing to its preponderance in the present lifestyle conditions where the dietary practice has gone completely out of sync. Grahani roga simulates Irritable Bowel Syndrome considering its cardinal features. It is prevalent among 10-20% of adults and adolescents, predominantly in females. Despite extensive research, an effective treatment and prevention strategy has not been developed due to its heterogenous etiopathogenesis. In this paper, neurological etiopathogenesis and pathophysiology of grahani roga is elaborated. Pathophysiology of Samana vata with respect to the Auerbach's plexus and Vyana vata with respect to Meissner's plexus of the enteric nervous system, in etiopathogenesis of grahani roga has been elucidated. Ghrita is considered as the probable mode of treatment due to its Vatahara and Agnideepaka properties.

**Keywords:** Grahani, Samana vata, Vyana vata, Ghrita

#### INTRODUCTION

Grahani roga holds its place in Ashta maha roga as described by Vagbhata<sup>1</sup>. According to Sushruta, grahani is Shashti dhara kala, situated between amashaya and pakvashaya. Grahani is described as the primary site of agni (digestive fire). The disease which originates in pitta dhara kala is grahani roga<sup>2</sup>. Kala is described as dhatu ashaya antara maryadaah which can be interpreted as the membrane which lies in between the body and lumen of the intestine. The site of the grahani roga is the membrane of the duodenum and the small intestine that secretes digestive juices. Grahani roga can also be understood as Irritable Bowel Syndrome (IBS) basing upon the cardinal features muhurbaddha and muhurdrava mala<sup>2</sup>. Irritable Bowel Syndrome is prevalent among 10-20% of adults and adolescents, predominantly in females<sup>3</sup>. According to the principle- Samprapti vighatanameva chikitsa, treatment of a disease is counteracting its pathogenesis, so, a critical analysis of etiopathogenesis of grahani roga has been discussed hereunder.

#### Etiology

Erratic dietary habit in the contemporary lifestyle can be considered as the major etiological factor of grahani roga (Irritable Bowel Syndrome). According to Charakacharya, the primary causative factor of grahani roga is loulya i.e., following food cravings and not following principles of food consumption like aharavidhividhana and ahara vidhi Visheshayatan. The conducive factors are- Skipping meals, indigestion, excessive intake of food, intake of incompatible, improper, heavy, dry, cold,

stale food and food incompatible with geographical climatic conditions and time, excessive fasting and suppression of natural urges. Iatrogenic causes like complications of improper purificatory procedures<sup>4</sup>.

Sushruta acharya illustrates mandagni as the causative factor of grahani roga as well as the complication of atisara (diarrhoea)<sup>2,5</sup>.

#### Pathophysiology

All the aforementioned etiological factors lead to vitiation of pachakagni (digestive fire) resulting in indigestion of even light food. This leads to formation of Sukta (toxins) from the indigested food which afflicts the body just like poison<sup>4</sup>. The ama dosha vitiates the pitta dhara kala which in turn causes vitiation of grahani. This results in frequent expulsion of either digested or undigested food material<sup>2</sup>.

#### Role of Samana and Vyana vata

Mandagni- subdued digestive power is caused due to diminution of Samana vata as it is responsible for secretion of the gastrointestinal juices. The expulsion of pakva and apakva anna is due to perturbances of Vyana vata which is responsible for peristaltic movements of Gastro Intestinal Tract (GIT).

#### Physiology of Samana and Vyana vata

Samana vata plays pivotal role in processing of food in Annavaha srotas. It primarily functions in gastrointestinal tract in proximity

of stomach and intestines. It promotes digestive fire (agni). It helps in holding food, digestion and separation of absorbable and non-absorbable matter. It further conveys the unabsorbed faecal matter to lower intestines. The faeces are expelled out with the help of Apana vata.

Vyana vata in the GIT helps in muscular relaxations and contractions of GIT and movement of food in downward, upward or in any direction. The nutritious fluid from the absorbed food, is circulated to whole body with the help of Vyana vata<sup>6,7</sup>.

### The enteric nervous system

It comprises of two main plexuses. The Auerbach's or Myenteric plexus and Submucosal or Meissner's plexus.<sup>8</sup>

The Auerbach's plexus is mainly organized as longitudinal chains of neurons between the outer longitudinal and inner circular muscular layer of the intestine. When stimulated, this plexus increases the tonicity, velocity and intensity of contractions of the gut. It is responsible for the motility throughout the whole gut. The neurotransmitters mainly responsible for intestinal relaxation are VIP- vasoactive intestinal peptide, nitric oxide, pituitary adenylate cyclase-activating peptide and purine. The stimulation of intestinal contraction occurs due to tachykinins and acetylcholine. This form specific pattern of contraction and relaxation in the gut called the peristaltic reflex. With distal relaxation and proximal contraction, the peristaltic movements facilitate movement of food through the GIT<sup>8</sup>.

The Vyana vata in GIT acts in the form of myenteric plexus that facilitates contraction and relaxation of GIT resulting in peristaltic movements. Thus, it is accountable for movement of food and waste throughout the GIT. It is also responsible for tone of the gut and intensity of the contraction of the gut depending upon the stimulation of Vyana vata.

The submucosal plexus lies in the submucosal tissue, which connects inner mucosal membrane to the deeper muscular layer of the stomach and intestines. It is more involved with local conditions and controls local secretion and absorption, as well as local muscle movements. The mucosa and epithelial tissue associated with the submucosal plexus have sensory nerve endings that feed signals to both layers of the enteric plexus<sup>8</sup>.

The Samana vata in the form of Meissner's plexus is responsible for stimulation of local muscles to contract and relax at sphincters. Thus, it facilitates holding of food and then passing of the food material to the distal part of the GIT. Samana vata in simulation with submucosal plexus promotes secretions of digestive juices, enzymes and bile that helps in digestion of food material. It is also responsible for secretion and absorption of nutrients. Thus, it is responsible for differentiation of absorbable and non-absorbable matter (sarakittavibhajana).

### Pathophysiology of Samana and Vyana vata

Perturbances of Samana vata leads to reduction of Pachaka pitta thereby resulting in mandagni in the Agni pradhana sthana-Grahani. Hence the food is not digested appropriately and develops ama (toxins). Thus, symptoms like lohaamagandhi tiktaamlodgara are developed.

The Vyana vata is vitiated and induces Shighra gati i.e., increases peristaltic activity that promotes increased frequency of defecation. Thus, inappropriate absorption of nutrients from the gut results in nutritional deficiency symptoms like oedema, general weakness etc.

The vitiated Samana and Vyana vata then fosters muhurbaddha: over activity of vata causes excess absorption of fluids from the food material causing increased frequency of hard stools; and muhurdrava: reduced absorption of fluids from the food material results in increased frequency of liquid stools.

Due to Asatmya, dushtabhojana and other causative factors, pitta dhara kala is vitiated causing inflammation of the mucosal layer. Low grade mucosal inflammation causes abnormal epithelial secretion and visceral hypersensitivity. Visceral sensitivity is due to increased transient receptor potential TRP Vanilloid (TRPV1) in enteric nervous system<sup>3</sup>.

Food intake increases the recto-sigmoid motor activity up to 3 hours of eating. The sensory responses are exaggerated due to visceral stimulation causing food intolerance. Pain increases with entry of food into the intestine and symptoms are improved with fasting<sup>3</sup>. This supports Langhana therapy advised by Charakacharya in grahani roga.

Sushruta compendium has postulated grahani roga as complication of atisara. Evidences suggests that it is more likely to develop Irritable Bowel Syndrome following infection with Campylobacter. Post enteritis increase in rectal mucosal entero-endocrine cells, T lymphocytes and gut permeability persists for more than one year. Bacterial overgrowth in small intestine is also seen. 5HT levels (serotonin pathways) are high which increases the gastro intestinal motility and visceral perception<sup>3</sup>; thereby increasing the frequency of defecation.

### Clinical features

Increased frequency of thinly formed stools, alternating constipation and diarrhoea, thirst, loss of appetite, dysgeusia, excessive salivation, asthma, oedema of hands and pedal oedema, pain in bone and joints, vomiting, fever, bitter and sour eructation with toxic metallic odour<sup>4</sup>.

Sushruta acharya described few more clinical features other than those described by Charakacharya. They are emaciation, greed for certain tastes, vinegar like, bitter and sour eructation, smelling like iron and smoke<sup>2</sup>.

In cases caused by aggravated Vata, pain is severe, Pitta causes burning sensation and Kapha causes feeling of heaviness in regions of rectum, heart, flanks, abdomen and head<sup>4</sup>.

### Diagnosis

#### Rome IV criteria (current classification)

Irritable Bowel Syndrome is defined as recurrent abdominal pain at least one day per week in last three months associated with one or two criteria:

1. Related to defecation
2. Change in stool frequency
3. Change in stool appearance<sup>3</sup>

#### Manning Criteria (older classification)

1. Relief of pain with bowel movements
2. Loose and more frequent stools with onset of pain
3. Passage of mucus
4. Sense of incomplete emptying<sup>9</sup>

## Investigations

- Faecal calprotectin (50 mcg/g) or faecal lactoferrin (4-7.25 mg/g)
- Stool testing for giardia.
- Serological testing for celiac disease.
- C-reactive protein levels  $\leq 0.5$
- Bristol stool form scale (BSFS)<sup>3</sup>

## Management approach

- If ama is in the gut then purgative therapy and dipaniya (carminatives) drugs are prescribed. If ama is converted to rasa and successive dhatu, the ama pervades whole body, then Langhana (fasting etc.) and pachana (digestive) therapy is indicated.
- Management according to faeces expelled:
  - Ama mala- faeces gets immersed in water and settles down: is treated initially with digestive drugs and then with palliative therapy.
  - Nirama or pakva mala- faeces floats in water: is treated by Shamana i.e., palliative therapy.
- In Sama condition Chitrakadi vati with ushna jala and takra (buttermilk)<sup>4</sup>.
- Shodhana (Purification therapies) is done in accordance with aggravated doshas<sup>2</sup>. Vata is the prominent dosha involved in pathogenesis of grahani so Vatika treatment is followed in Irritable Bowel Syndrome. In interrupted increased frequency of defecation, Snehana with Ghritapana for 3 days followed by Swedana. Later Mardana with Vataghna taila and Niruha Basti is done. Virechana with Eranda taila along with kshara or Tilwaka ghrita with kshara. Anuvasana Basti with formulation of dipaniya dravya, amla rasa dravya, vataghna dravya and taila is followed by Samsarjana krama with Laghuanna peya, vilepi etc. along with ghrita.
- Ghrita acts on mandagni as it is the best Agnideepaka i.e., increases digestive fire. Ghrita due to its Sneha guna also acts on vitiated vata and normalizes its function. Ghrita preparations can be considered as one of the best remedies in grahani as it may act on Samana vata and promote its function by increasing the digestive fire and also mitigates Vyana vata with its sneha guna.
- Various ghrita preparations indicated are dashamooladya ghrita, trayushnadi ghrita and panchamulyadya ghrita.
- Peya (liquid diet) processed with dipaniya (carminative) drugs. Churna (powder) of dipaniya (pippalyadigana), pachaniya (haridradigana), sangrahi (ambasthadigana) is administered along with takra (buttermilk).
- Takrarishta and takra being tridosahara is beneficial in grahani<sup>4</sup>.
- Agnideepaka ghrita is advised in grahani roga that is caused by samana vayu avrta apana vayu<sup>10</sup>.

## CONCLUSION

Ghrita is considered as snehottama (the best among sneha). The Samanya guna (property) of Ghrita is vataghna and action is agni vardhaka. Thus, ghrita preparations along with dipaniya drugs can be considered as the probable effective mode of management of grahani roga.

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