



Review Article

PROBABLE ACTION DIMENSIONS OF MADHUTAILIKA YAPANA VASTI IN HIRSCHSPRUNG'S DISEASE

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ABSTRACT

Hirschsprung's disease (HD) is a congenital disorder defined by the absence of ganglion cells in terminal rectum which is responsible for non specific symptomatology including chronic constipation which is usually not relieved with oral laxatives. In modern science, the treatment option is surgical removal of affected area followed by anastomosis but more post operative complications and lower quality of life are the major concerns while adopting surgical procedures. Hence the scope of Ayurvedic modalities in HD is to be explored. When we consider the pathology as *Udavartha* due to deranged *Pakwasayagatha Vatha*, the prime importance of *Vasti* can be analyzed. It is the *Prakupitha Apana Vayu* which leads to *Udavartha*. Children suffer from chronic accumulation of *Mala* due to *Pratiloma Gati* of *Vayu* which over time becomes hard and dried and may further result in infection. Hence the line of disease management requires *Sodhana* for the elimination of chronic stasis of *Mala* with simultaneous *Brimhana* and *Rasayana* action for gut brain nourishment and regeneration. *Madhutailika Yapana Vasti* which is mentioned in *Ashtangahrudaya Kalpasidhi Sthana* serves these purposes simultaneously. The present work aims at exploring the current knowledge on probable mode of action of *Madhutailika Yapana Vasti* in Hirschsprung's disease and to highlight the research gaps that we must overcome to further elucidate the vast action dimensions of *Yapana Vasti* in the same disease.

INTRODUCTION

Hirschsprung's disease is a congenital disorder defined by the absence of ganglion cells at the Meissners plexus of submucosa and Auerbachs plexus of muscularis in terminal rectum that extends in a variable distance proximally.^[1] It is responsible for non specific symptomatology including chronic constipation and neonatal obstruction which is not relieved by oral laxatives. The most accepted theory of cause of the disease is that there is defect in cranio caudal migration of neuroblasts originating from neural crest, a process that begins at 4 weeks of gestation and ends at week 7 with arrival of neural crest derived cells at the distal end of colon.^[2]

Failure of cells to reach the distal colon leaves that segment aganglionic and therefore non functional resulting in Hirschsprung's disease.

Children who have Hirschsprung's disease are prone to serious intestinal infection called enterocolitis which has to be managed with colon cleaning and antibiotics.^[3] The stasis and bacterial overgrowth which result in enterocolitis can even cause colonic perforation and sepsis.

Modern management is mainly surgical i.e. to remove the poorly functioning aganglionic bowel and to create an anastomosis to distal rectum with healthy innervated bowel.^[4] But the post operative complications and lower quality of life are the major concerns. Side effects mainly include post operative enterocolitis, incontinence, faecal fistula, intestinal obstruction, anal stenosis and diarrhoea.^[5]

Gut Brain Axis (GBA)

GBA regulates intestinal motility and secretions. The signals sent by the motor and sensory components of the gastrointestinal tract to the Central

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Nervous System (CNS), and the response signals to the intestine together constitute GBA. After the brain, the digestive tract contains the largest nervous system in the body. The Enteric Nervous System is two thin layers such as the 'myenteric plexus' and the 'submucosal plexus' consisting of more than 100 million nerve cells lining the gastrointestinal tract from esophagus to rectum.^[6] The Gut Brain Axis (GBA) is an integral bridge between the Central Nervous System (CNS) and the Enteric Nervous System (ENS) of the body.^[7]

The gut feelings are closely related with brain activities just like one feels abdominal discomfort when in stress. Stress signals from the head's brain can alter nerve function in the stomach resulting in heartburn. The nerves in the gut become sick corresponding to the nerve cells in the brain and vice versa.

Role of Gut Microbiota

The number of microorganisms present within the gut is about ten times than the cells present in human body which is approximately about 10^{14} . Studies show that the gut microbiota is central to the development and maturation of the human CNS and ENS in the early postnatal weeks. Nutrition affects the microbiota colonization and gut metabolites which can influence brain development and functions. The gut microbiota regulates neural programmes of intestinal motility i.e. the altered gut microbiota may play a role in the pathogenesis of chronic constipation.^[8]

Research suggests that Hirschsprung's disease patients showed decreased intestinal microbial richness with expansion of enterobacteria. Intestinal microbiota in Hirschsprung's disease patients had not undergone normal age related maturation.^[9]

Hirschsprung's Disease in Ayurveda

All the neurological aspects in our body are controlled by *Vatha Dosa*. '*Vibhago Dhatoonam*' is the function of *Prakrutha Vatha Dosa* i.e. differentiation and proliferation of stem cells which is impaired in individuals affected with Hirschsprung's disease.^[10] The functional aspects of enteric nervous system are dependent on normalcy of *Pakwasayagatha Vatha*. Derangement in *Pakwasayagatha Vatha* leads to altered ENS functions i.e., altered intestinal secretion and motility.

Based on symptomatology, the condition can be considered as *Udavartha* due to *Pakwasayagatha Vatha Kopa*. *Malarodha* is considered to be one among the symptoms of *Pakwasayagatha Vatha Kopa*.^[11]

Role of Madhutailika Yapana Vasti

The *Vasti* in which *Madhu* and *Taila* are used as the dominant ingredients with excess quantity is called as *Madhu Tailika Vasti*.^[12] The action perspectives of *Vasti* covers functions such as *Shodhana* and *Snehana*

which is done by *Niruha* and *Sneha Vasti* respectively. It can be administered in all seasons at all times and in all age groups.^[13] There is no necessity of administering *Sneha Vasti* in between or initially. *Yapana Vasti* performs three functions simultaneously i.e. *Sodhana*, *Brumhana* and *Rasayana karma*. It is *Nava Prasrutha Vasti* based on the quantity taken.^[14]

As per *Susruta Acharya*, *Prasrutha* is not equal to *Paladwaya*. It is the amount of *Vasti Dravya* that can be accommodated in *Kunjitangula Pani of Atura*.^[15]

Madhutailika Vasti is mentioned in *Ashtangahrudaya Kalpasidhi Sthana Vastikalpa Adhyaya*.^[16]

Ingredients

As children are the most affected, quantity of *Vasti* can be designed accordingly.

Classical *Yoga* contains ingredients in the following proportion.^[16]

Madhu = Taila = 2 Prasrutha

Erandamoola kwatha = 4 Prasrutha

Satapushpa Kalka = 1/2 Pala

Saindhava = 1 Karsha

As the condition deals with chronic constipation, *Eranda Taila* can be selected as it is superior in providing *Bala* as well as *Snehana* and *Rechana* in action.^[17]

DISCUSSION

Hirschsprung's disease requires three spectrum management simultaneously as

- *Srotosodhana*
- *Brumhana*
- *Rasayana*

Sodhana is to eliminate chronic stasis of *Mala* and bacterial overgrowth from the colon.

Brumhana is for gut brain nourishment.

Rasayana is for the maintenance and regeneration of nerves in the enteric nervous system.

Madhutailika Yapana Vasti serves all these purposes simultaneously.

The action can be explained based on gut brain theory.

- According to *Susruta Acharya*, *Vasti* by its *Veerya* spreads into the entire body when administered through rectal route just like the tree gets flourished by watering its root i.e., it probably influence the autonomic nervous system through enteric nervous system and starts reflexive motion of peristalsis.
- According to *Vridha Vagbhata*, role of *Pancha Vayus* are highlighted while explaining the mode action of *Vasti*. *Vasti* acts by its *Oushadha Virya*. The *Virya* first act upon *Apana Vayu* due to its *Asanna Margatwa* and is transferred to *Uttarottara Vayus* just like an energy transfer. It facilitates *Pitha Kapha Harana* along with *Tarpana* of *Pancha Vayus*. This

type of stimulation commencing from *Apana Vayu* and finally reaching the *Prana Vayu* can be clearly covered under the perspective of Gut Brain mechanism. This transfer of signals from the sensory unit and return signals are through neural pathways. Thus it can be concluded that *Vasti* has vast action dimension on CNS though it is administered along the rectal route.

- It is evident that patients of Hirschsprung's disease are deficient in intestinal microbial richness with defective age related maturation of gut microbiota. Also there is possibility of expansion of enterobacteria that could later cause enterocolitis like severe infection.
- *Madhutailika Yapana Vasti* by virtue of its *Sodhana* property slough off the defective intestinal flora, prevents chronic stasis and reduces the chances for enterocolitis.
- *Vasti* through its nutritive properties affects microbiota colonization and gut metabolites and directly affects central nervous system.
- Through its *Rasayana* property, *Madhutailika Yapana Vasti* influences the normal bacterial flora of colon which is responsible for the synthesis of vitamin B12 which aids in the maintenance and regeneration of nerves of ENS.
- Researches proved that gut neurons have the ability to regenerate and can completely turn over.
- *Madhutailika Yapana Vasti* by its *Brumhana* and *Rasayana* effect may stimulate the stem cell precursors thereby augments neuronal regeneration.
- It may facilitate the turnover of gut neurons in programmed manner and improves their activity.
- In the context of *Udavartha Chikithsa*, *Acharya Charaka* has explained that *Vasti* can cause *Praguneekarana* of *Sira* located in *Guda Pradesha* which can be correlated with nourishment of nerves in large intestine and may increase the innervation of muscles thus increases their contractibility.
- The altered gut microbiota plays role in the pathogenesis of deranged intestinal motility and chronic constipation. *Vasti*, by modifying intestinal flora may aid in such condition.
- In the present disease, both the local and systemic effects of *Vasti* are of equal importance.
- i.e local stimulation and evacuation at the enteric level as well as advanced action to facilitate regeneration of neurons and its maintenance.
- It is being studied that the gut response to repeated stimulus can condition the gut reflexes i.e when we practice *Vasti* as *Karma* or *Kala Vasti* schedule, the action of *Vasti* is giving repeated stimulus to the gut

brain and hence the possibility of conditioning gut reflexes is to be analyzed.

- A previous case study on Ayurvedic Management of Hirschsprung's disease by Parul Sharma and Ved Bhushan Sharma concluded that patient responded well to *Sodhana (Yoga Vasti)* and *Samana* therapy when treated on the line of *Udavartha Hara Chikithsa* and there was no need of surgery.

CONCLUSION

Experiments demonstrated that neural crest stem cells are present even in the adult gut and are capable of proliferation and differentiation and thus can recreate a functional ENS. Possibility of stem cell transplantation into the aganglionic gut and reactivation of dormant stem cells in the gut to regenerate ENS are being actively investigated.

The action of *Vasti* is beyond the level of imagination. Its dimensions are *Ooha Asambhava*. It is considered to be the *Ardha Chikitsa*. The role of *Vasti chikitsa* at ganglionic level should be assessed further to explore its higher level of action potential.

If the probable action dimensions of *Madhutailika Yapana Vasti* could cover these aspects, it would be a milestone in the management of Hirschsprung's disease.

Controlled trials should be conducted in good sample size to explore the vast dimensions of *Madhutailika Yapana Vasti* in the same.

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