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Nasya Karmukta W.S.R To Pharmacodynamics of Nasya

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Abstract

Ayurveda is truly holistic medicine. In Ayurveda there are two folds of treatment that is Shodhana and Shamana. Shodhana includes panchakarma which is used to detoxify or purify the whole body by removing all vitiated doshas in body. Panchakarma has specific application in the care of tridosha. Nasya is one of the panchakarma procedure which specifically used to treat Urdhva Jatrugata Vikaras. According to Ayurveda, nose is the gateway of Shiras –brain , it can provide direct connection between brain and nasal mucosa .The Medicine administrated through nose can transfer directly to cranial cavity so Nasya therapy is used to treat Urdhwa-Jatrugata Vikaras which are generated by vitiated Kapha and Vata dosha. Medicated Sneha dravya gets easily absorbed by mucous membrane of nasal cavity and get easily transmitted to cranial cavity. The anatomical connectivity of nose with cranial cavity has been also proved by modern medical science. The direct nerve supply from CNS and vascular supply to nasal cavity helps to understand probable mode of action of
Keywords: Nasya Karmukta, Sneha Nasya.

Introduction

Nasya i.e Shirovirechana is one of the Panchakarma therapy explained in all Samhitas.Nasya therapy is Given through the Nose for purification of Vitiated doshas in Head reagion. Head is the seat of Brain and Nose.Nose and The pair of Nostrils are the most vital apertures of the body nearest to the brain[1].

From ancient era nose is an important drug delivery route. There are various references found in Ayurvedic texts which indicate that this route is used for delivering drug to local and for the systemic action of drug. Maharshi Atreya has given first place for Shirovirechana. Nasya is the method in which various form of drugs like medicated oil, Churna ,Swarasa and Dhuma will be administered through the Nose depend on diseased condition . Nasya is mainly useful in Urdhwa jatrugata Vikaras. Various literature from the Ayurvedc Samhitas clearly mentioned that the drug administered through the nose may act on the Brain. Delivery of drug to Brain from nasal route may occur through olfactory neuro epithelium.

Nasya Karma

According to Acharya Sushruta, administration of Sneha Dravya (medicated oil) through the nostrils is called nasya karma[2] . Acharya Vaghbhata has stated that " Nas Hi Shirso Dwaram " which means the nasal passage is considered as the portals of head so the Nasya Karma is considered as the specific procedure for the Urdhwa-jatrugata Vikaras.[3]

According to Ayurveda head region is the site of Kapha dosha. In Kapha predominant urdhva jatrugat vikaras, nasya is considered as the best Panchakarma. Acharya Charaka has used the term "Nsta Prachardana" for Nasya.[4]

Nose is the gate way of shiras , The Medicated oil or drug administered through nose through Nasya therapy reaches Shringhataka Marma–a sira marma through the Nasa srotasa & also reaches to junctional places of siras of netra, srotra, kantha etc and remove vitiated doshas present at Urdhwa jatru i.e above the supraclavicular region and expel them from the uttamanga.

Classification Of Nasya

According to Acharya charaka[5] –

1.Navan Nasya –a.Snehana Nasya
b.Shodhana Nasya
2. Avapidaka Nasya – a.Shodhana Nasya

b. Stambhana Nasya
3. Dhumpana Nasya
4. Dhuma Nasya – a.Prayogik Nasya
b.Vairechanik Nasya c.Snehaniya Nasya
5. Pratimarsha Nasya – a.Sneha Nasya

- According to Acharya Vaghabhata[6]
  1.Virechana Nasya
  2.Shaman Nasya
  3.Brihana Nasya
- According to Acharya Sushruta [7]
  1.Shirovirechana Nasya
  2.Snehan Nasya
- According to Acharya Kashyapa[8]
  1.Brihana Nasya
  2.Karshana Nasya
  3.Shodhana Nasya
  4.Purana Nasya

Administration of Nasya

According to Acharya Charaka nasya should be administered in pravrut, sharad and vasant rutu. But depending upon disease condition it can be given in any season by Providing artificial conditions of the above mentioned seasons; for example, in summer nasya should be given in cold places and in cold season it should be given in hot places.

In Samhitas, time schedule for nasya is mentioned as below -

1.According to Rutu[9] (seasons)
Grishma and Varsha Rutu - Evening.
2. According to Dosha-
Kaphaja Vikara – Morning
Pittaja Vikara - Afternoon
Vataja Vikara - Evening. (Su. Chi. 40/24)

Classical Schedule of Nasya Karma

Sr. No	Acharya	Durations (Days
1	Acharya Vagbhata	3,5,7,8
2	Acharya Charaka	According to disease.
3	Acharya Sushruta	1, 2,7,21
4	Acharya Bhoja	9

Matra of Nasya Drops in each Nostril

Sr.No	Type of Nasya	Hrasva Matra	Madhyama Matra	Uttama Matra
1	Shamana Nasya	8	16	32
2	Shodhana Nasya	4	6	8
3	Marsha Nasya	6	8	10
4	Avapida Nasya	2	2	2
5	Pratamarsha Nasya	2	2	2
6	Sneha Nasya	8	32	64

Anatomical Aspect Of Nasal Cavity Related To Pharmacodynamics Of Nasya

Nose is an organ of upper respiratory system having external and internal portion, also receptor organ for olfaction. All ancient Acharyas have considered Nasa as the gateway of Shira and it does not mean that there is direct channel connecting between brain and nose the olfactory area is the only place in the whole human body where there is contact between the outer surface and Central Nervous System.

Nasal Mucosa:

It Consists of Two types of mucosa i.e., Olfactory and respiratory mucosa. Olfactory mucosa occupies superior part of nose & extending to superior part of middle nasal concha. Respiratory mucosa is rest of the cavity. The total surface area available in the nasal mucosa is estimated to be about 180 cm^2 , of which 10 cm^2 is olfactory mucosa and 170 cm^2 is the richly vascularised respiratory mucosa. Olfactory Mucosa having 3 type of cells

1. Olfactory receptors
2. Supporting cells
3. Basal cells

Olfactory mucosa also consists of mucus producing glands called Bowmans's glands. These produces the mucus that moistens olfactory epithelium and dissolve the odorants so that transduction can occur. These glands & supporting cells are innervated by branches of Facial nerve(VII cranial) Impulse in this nerve in turn stimulates lacrimal gland(tears), and nasal mucus gland(runny nose) The nerve cells of the olfactory epithelium project into the olfactory bulb of the brain, which provides a direct connection between the brain and the external environment. Paranasal sinuses like frontal, maxillary, sphenoid and ethmoidal are opens into nasal cavity through its lateral wall. General

sensory nerves of nasal cavity are derived from general efferent fibers of trigeminal nerve which are distributed to whole of the lateral wall.

Mechanism of Nasya can be explained Through Modern Anatomical And Physiological Studies as follows

Neurological Pathway

First there is olfactory stimulus by drugs. Axons of bipolar olfactory receptors pierce through cribriform plate of ethamoid bone and reach olfactory bulb. Here axon synapses with dendrites of mitral cells. Axons of mitral cells leave olfactory bulb and forms olfactory tract. Now olfactory tract enters into brain where it is divided into two pathways

a) Medial olfactory area of brain- it consist of group of nuclei located in midbrain portions of brain immediately anterior to hypothalamus. Most conspicuous is septal nuclei. It receives connection from olfactory bulb, hippocampus, amygdala, hypothalamus, habenula, thalamus, cingulate gyrus and midbrain.

b) Lateral olfactory area of brain- composed mainly prepyriform and pyriform cortex. Also cortical portion of amygdoloid nucleus.

Functions

1) Hippocampus: Centre of emotions and long term memory.

2) Amygdala: It is involved in sense of smell so it receives input from olfactory bulb and cortex. Stria terminalis specifically bed nuclei (BNST) act as information pathway between amygdale and hypothalamus as well as hypothalamus and pituitary gland. It is a part of limbic system responsible for emotions and motivation.

3) Hypothalamus: It is considered as the head nucleus of Autonomic nervous system. It links the nervous system to endocrine system via pituitary gland. Axons of hypothalamus extend to sympathetic and parasympathetic nuclei of brain stem and spinal cord. So through ANS responsible for cardiovascular regulation, regulation of body temperature and body water, uterine contractility, GIT regulation, feeding regulation. Regulation of emotional and behavioral patterns together with limbic system. Regulates body temperature. .

4) Habenular nuclei: mainly involves in olfaction.

5)Thalamus: consciousness, sleep and sensory interpretation.

6)Cingulated gyrus: part of limbic system involves with emotion, processing, learning, memory.

7)Midbrain: Vision, hearing, motor control, sleep/awake, arousal (alertness) Thus olfactory stimulation leads to indirect stimulation of above areas of brain and its functions.

8) Basal ganglia-Controls body movements Diffusion method Lipid soluble substances have greater affinity for absorption through the cell wall of nasal mucosa.

Vascular Pathway

Kiesselbach"s plexus or littles area which lies in septum drains directly into facial vei

The large mucosal surface covered with a rich vascular bed of highly permeable capillaries creates an opportunity for intranasal medication delivery. For this reason, when medication of proper concentration and molecular character are delivered on to the nasal mucosa, they are rapidly transported and delivered to the circulation.

Diffusion of Drugs

Lipid soluble substances have greater affinity for passive absorption through cell wall of nasal mucosa. Cilia of olfactory cells and body of olfactory cells contain large lipid materials that are why lipid soluble substance causes marked stimulation of olfactory cells. Non-polar hydrophobic molecules diffuse through lipid layer of plasma membrane in and out of cells. Such molecule includes oxygen, carbon dioxide, nitrogen gases, fatty acids, steroids and fat soluble vitamins. It is route of absorption of some nutrients and excretion of waste by body cells which are lipid soluble. Para cellular transfer of substance by passing through the intercellular space between cells i.e hydrophilic drug like kwath, avapedak etc. Tran cellular transfer of substance by passing through cell (apical and basolateral membrane) i.e lipids, lipophilic drugs like sneha.

Blood Brain Barrier

The transfer of drugs to brain from blood circulation is normally hindered by BBB which is virtually impermeable to passive diffusion. However drug transfer through olfactory nerve can bypass BBB and enter brain directly. Olfactory transfer into brain thought to occur by either slow transport inside olfactory nerve cells to olfactory bulb or by faster transfer along the perineural space surrounding olfactory nerve cells in CSF surrounding olfactory bulb and brain.

Discussion

Shira is considered as Uttamanga and to protect it from ailments it should remain healthy and disease free. Nasya Karma is the best Shodhan therapy mentioned in Urdhwajatrugata Vikara. There are many factors responsible for nasal absorption like bioavailability, size of particles, Ph and dose . After Administration of Nasya Dravya the medicine into the nostrils get absorbed by mucous membrane of nose due to high vascularity and after absorption of the drug it may follow neural and circulatory course to reach the site of action. It can also influence the psychic level (limbic system) and general circulation and ultimately produce the action (excitation or sedation)

Positon of Nasya plays a major role in retaining the administered nasya dravya in the nose and thus increasing the contact time with mucosa. In Pooling of blood from nasal veins to venous sinuses of the brain is more likely to occur in head lowering position due to gravity and thus absorption of drug into meninges and related intracranial organ is a point of consideration. Administered drug enters into the intracranial region by direct pooling and systemic circulation by vascular path. It may possible that Nasyaaushadhi through neurological pathway works as perception of smell is received through olfactory pathway and thus controlling various nervous and endocrinal diseases.

Paschata Karma of Nasya, Urdhvanga massage, Swedana, Dhoompana and Kavalagraha is advised. It helps to increase the efficacy of the treatment and help to drain out the remaining Utklishta Doshas Thus the procedures, postures and conducts explained for Nasya Karma are of great importance for drug absorption and transportation

Conclusion

Keeping view of above said facts it can be concluded that The drug administered through nasa causes stimulation in higher centers of brain. Olfactory, Trigeminal &Facial nerve nerves are stimulated by Nasya karma. Lipid soluble substances have grater affinity for absorption through the cell wall of nasal mucosa .Nasya dravya absorbed through nasal mucosa reaching brain and acting on important centres controlling different neurological, endocrine, circulatory function and showing systemic effect Using absorption enhancer, the bioavailability of large molecules can be improved through nasal route.

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