Analytical Study of SringatakaMarma

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Access this article on online: www.japs.co.in

Published by International-Academy of Ayurveda-Physicians (IAAP), 5HB, Gandhinagar, Jamangar-361 002, Gujarat, India

Abstract

Sringataka, one among the Urdhva-jatra-Marma deserves special importance as it is related with all the sense organs. It is explained as the network of Siras providing nourishment to sense organs namely tongue, eyes, nose and ears. Prognostically it is a Sadya-pranahara-Marma, numerically quadrupled and metrically Panitala. It is a humble attempt to substantiate the anatomical aspect of SringatakaMarma on the basis of various classical references. Classical literature, modern literature, books, thesis, journals articles, internet materials were reviewed for the topic and related information and references were collected and analyzed scientifically. Description of Sringataka in Nasya, Kshavathu and Sandhi are also considered to substantiate the anatomical aspect of Sringataka Marma. Structurally, it can be the region of conchae-middle and inferior taken together and functionally with pterygopalatine fossa and cavernous sinuses.

Keywords: Cavernous sinus, Conchae, pterygopalatine fossa, SringatakaMarma.

Introduction

An individual is the epitome of universe in whom ‘Prana’ or the ‘Jeevachaitanya’ is manifested. A unique concept of Ayurveda is the description of certain vital points of the body which are named as Marma, conglomeration of Mamsha, Asthi, Sira, Nasyu and Sandhi and where the Prana resides, which causes pain, miseries or death when injured. It is a complex anatomical site, where definite physiology rests and it produces specific traumatic effects. Out of the 107 Marma explained, 37 are located in the head and neck region. Sringatakais one among these 37 Marma.

Sringataka literal meaning is that which leads towards highest peak, or that which can be fatal on reaching a height. The term means important, thorn structure resembling in shape to a shell related with \( \text{Sankhavartha Sandhi} \). In collective singular as \( \text{Srotra-sringatakam} \). It is the meeting place of 4 Srotases which are related with the 4 sense organs-Jihwa, Akshi, Nasika and Srotra, and is located in the Tatu. Injury to this will cause immediate death.⁴

The definitions given are not sufficient to locate the exact location of the Marma hence all the available descriptions of Sringataka from the classics is to be analysed. The other areas where we come across the description of Sringatakaeare Nasya, Kshavathuand Sandhi. The drug administered through the nasal orifice after reaching Sringataka, spreads towards the Shiras and then the Siras related with Netrya,Srotraand Kanda and wipes out the vitiated Doshas from Uthamanga as easy as a vein of a grass is removed from its blade.⁴ All Acharyas had included Sringatakain the pathogenesis of Kshavathu. It is explained as the Marma related with Nasya or Tarunashiti related with Nasya.⁵ While describing Sandhi, it is said that Sankhavartha Sandhi is present in Srotra and Sringatakai.⁶ It is a humble attempt to substantiate the anatomical aspect of Sringataka Marma on the basis of various classical references. Considering all the references of Sringataka, the regions of pterygopalatine fossa, cavernous sinuses, nasal conchae, middle cranial fossa and thalamus can be taken for correlation.

Materials and Methods: Classical literature, modern literature, books, thesis, journals articles, internet materials were reviewed for the topic and related information and references were collected and analyzed scientifically to determine the anatomical aspect of Sringataka Marma.

Discussion

The Sankhavarta Sandhi is said to be present in Srotra and Sringataka. Here also there are two opinions related to the structure. Commentator Haranachandra explains that Sankhavarta Sandhi is present in regions of Srotra and Sringataka. Indu, commentator of Ashtanga-sangraha takes the term in collective singular as Srotra-sringatakam and gives explanation as Bhruvopari Karma Nikates. In the Srotra it can be correlated as cochlea considering its shape. But for the region Sringataka, some additional points have to be considered.

Similar to cochlea in ear, we have to go for a structure resembling in shape to a shell related with nasal cavity. Lateral wall of nose on sagittal view showed the curved conchae-middle and inferior. The superior was very small when compared to other
two and not appeared to be curved. A posterior approach of the nasal cavity i.e. through choanae showed only the 2 conchae, middle and inferior. It very well resembled a whorl from posterior view and certainly was 4 in number considering both sides. Dalhana quotes that Sringatakais Nasavamsasrita Ashi Marma[7], the region of middle and inferior conchae of nasal cavity was considered. Hence it can be inferred that the Sringataka explained in the context of Sandhi may most probably be the region of nasal conchae.

Considering the anatomy of nose, a medicine administered at the anterior nares passes mainly through the floor of the nasal cavity underneath the inferior concha and partially through the middle meatus. When the position of the head is considered chances are very less for the medicine to reach upto the roof i.e. cribiform plate. The medicine passing through the meatuses reach the posterior nares from where it traverse the nasopharynx and finally reaches the mouth. So the absorption of the medicine is mainly happening in the region of the concha itself.

Here the explanation of our Acharyas about the form of medicine deserves special mention. The Churna or the powder form is to be blown into the cavity which can very well reach upto the cribiform plate, from where they get absorbed through the perineural sheaths of olfactory nerve fibers. The drugs used in Svarasa are mainly Teeksha, which by itself penetrates the mucosa and easily spreads to surrounding tissues.

All these findings prove that the region Sringataka is located in the nasal cavity around the region of conchae. The descriptions of Sandhi, Nasya, Kshavathu point towards the fact that nasal conchae i.e. middle and inferior should be taken into account for correlating with Sringataka. Numerically the Marma is explained as quadrupled. The middle and the inferior concha taken together justify this description also.

Based on the definitions given for Sringataka by the Acharyas, the region of cavernous sinus and pterygopalatine fossa can be considered for correlation.

The cavernous sinuses are 2 in number and are located in the middle cranial fossa on either side of body of sphenoid. When its tributaries are considered, the venous drainage from all the sense organs is reaching the sinus, directly or indirectly. Anteriorly, it is directed towards the superior orbital fissure through which it communicates with the orbit. Through the cribiform plate the nasal cavity communicates with anterior cranial fossa. The posterolateral aspect of sinus is related with the petrous temporal, which on its posterior has the opening of internal auditory meatus. So considering the bony relations the region can communicate with the sense organs except the tongue.

The intracranial course of internal carotid artery is through the sinus. An injury to this region can certainly be fatal. The cortical centers of all the sensations are supplied by the branches of the internal carotid artery. So it can be said that the artery is indirectly helping the normal functions of the sense organs.

For explaining the action of Nasya, the drug administered reaches the mucosal surface of the cavity from where it is absorbed by the vessels and the perineural sheaths of the nerves. The venous return from the nasal cavity mainly drains into cavernous sinus and thus comes into the systemic circulation.

The pathogenesis of Kshavathuis just the mucosal irritation of the nasal cavity which cannot be explained in relation to the cavernous sinus. The stimulus of irritation passes through the branches of the trigeminal nerve and reaches the centre, from where a series of reactions are triggered which results in sneezing. So if the trigeminal ganglion which lies postero-lateral to the cavernous sinus can also be taken into account along with the sinus, then the sneeze reflex can be explained.

Pramana of Sringatakais Panitala which is roughly 6-7 cm. If both the cavernous sinuses along with the middle portion are taken into account, the measurement almost coincides with the Panitalamana.

Pterygopalatine fossa is the pyramidal shaped fossa is located below the apex of the orbit with Communications superiorly-orbit, inferiorly- oral cavity, medially-nasal cavity, posteriorly-typanic cavity. The communications denote that the fossa is related with all the sense organs. Thus the opinion of Vagbhata i.e. ‘Kha-Chaithushaya-Sangame’[8] is being clarified. If the location of the region is being traced, it lies in the postero lateral aspect of nasopharynx. Thus its location as Talu can also be justified.

The contents of fossa are maxillary artery, maxillary nerve and pterygopalatine ganglion. Considering the third part of maxillary artery and its branches, it can be seen that all the sense organs except tongue are supplied by one or the other branch of maxillary artery. The arterial supply very well fulfills the explanation of Susruta that it is providing nourishment to all sense organs. Maxillary nerve is the second division of trigeminal nerve, and is purely sensory. It receives sensory fibers from eyes, nose and mouth. There is no supply to ear and tongue. Pterygopalatine ganglion is the largest peripheral ganglion of parasympathetic system. Topographically it is related with maxillary and functionally connected with greater petrosal branch of facial nerve. This ganglion provides branches to eyes, nose and oral cavity.

Considering the region of pterygopalatine fossa, almost all the explanations relating to location,
structure, prognosis, action of Nasya, pathogenesis of Kshavathuets can be explained.

The commentary of Indu about Sringatakaas ‘Shiraso-Antharmadyam’ and the explanation of Bhela as ‘BruvorMadyam’ may be correlated on neuroanatomical basis. From this broad explanation, two or more regions can also be considered. The interior of Shira can be either middle cranial fossa, interior of brain in its middle portion, or the structures of the brain related to middle cranial fossa. In the internal aspect of brain, middle region which includes the vital structures such as hypothalamus, thalamus etc. can be considered. The structures involved are sense organs and so if their functional aspects are considered, the region of thalamus which is the sensory relay station cannot be spared.

All the sensory stimulus first reaches the thalamus for relay and from there passes to cerebral cortex, except olfactory impulse. The olfactory sensations indirectly pass from amygdala to thalamus. Any pathology related with thalamus can affect the normal functioning of the senses.

The region of thalamus very well fulfills the MarmaAbhigathaLakshana of SadayapranaharaMarma explained by Vagbhata. This is only a functional correlation; anatomically this region cannot fulfill all the other explanations. After critically analyzing all the possible correlations, and anatomical and functional aspects, the regions of concha, pterygopalatine fossa and cavernous sinus are taken into consideration. The portion of middle and inferior conchae taken together clearly explains the anatomical descriptions of SankhavarthaSandhi, PanitalaMana and number as four. It also fulfills the location of Talu as it is just above it. The region of pterygopalatine fossa which is located just lateral to nasal cavity and below the orbital cavity very well fits into almost all the explanations. Suṣruta explanation of ‘SantharpaneenumSiranam’ can be well justified as maxillary artery provides branches to all sense organs. The ‘KhaChatushtiyayaSangama’ of Vagbhata can be explained as the region has communication with all the senses. The location explained as ‘Talu’ is almost correct as it lies just lateral to the nasal cavity. The sensory fibres of the nasal mucosa mainly pass through the maxillary nerve and so Kshavathuand Nasya can also be explained. The pterygopalatine ganglion region can also be fatal as maxillary artery and its branches are present. Thus the region can be anatomically and functionally correlated with the descriptions. In the case of cavernous sinus, the nasal mucosa is mainly drained by its tributaries and thus the drug administered enters into systemic circulation. As carotid artery comes in its relation, the region can be fatal and if the intercavernous sinusides are also considered, the number becomes 4. Thus the region is functionally related.

Conclusion

Sringataka, one among the Urdhwajatru Marma deserves special importance as it is related with all the sense organs.

On the basis of explanations of Nasya, Kshavathu and Sandhi, it was concluded that structurally it can be correlated with the region of conchae-middle and inferior taken together and functionally with pterygopalatine fossa and cavernous sinus. The findings can be made use of in further studies of Nasya and Kshavathu. The study can be expanded and confirmed by the advanced medical investigatory techniques such as CT scan, Thermal imaging etc.

References


Source of support: Not declared; Conflict of interest: None Declared