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Ayurveda

CONCEPT OF ADHIPATI MARMA AND ITS APPLIED ASPECT

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ABSTRACT *Ayurveda* have unique and useful basic concepts. *Marma* and *Avedhya sira* are important structural concepts. *Marma* also called as *shalya vishayardha*. *Marma* is defined as *'marayanti iti marma'* that spots which when injured, kills person. *Marma* are 107 in number. These are classified on basis of structure, consequences of trauma, sites and location, number and measurement. Out of 107 *Marma*, 37 *Marma* are *urdhvajatrugata marma*. *Acharya Charaka* called *'Shira'* as *uttamanga* as *indriya* and *prana* resides in it. *Adhipati marma* is an *urdhvajatrugata Marma*. On the basis of traumatic effect it is *sadhyopranahara marma* and on the basis of structure it is *Sandhi Marma*. It is *half angula* in measurement. *Avedhya siras* are those which should not be punctured otherwise leads to harmful effects or death. According to *Acharya Sushruta*, it is situated just under *romavarta* (ringlet of hairs) and inside the cranium superiorly at confluences of *siras* (veins). Aim of this paper is to find out appropriate structure of this *marma* and its applied aspect w.s.r to *Avedhya sira* in modern context.

KEYWORDS :

INTRODUCTION:

Acharya sushruta described details of 107 marma and their usage in surgery. The term marma has its genesis from the Sanskrit root word 'Mri' representing sense of vital part of body. Acharya sushruta defined marma as juncture place of mamsa, siras, snayu, asthi, sandhi. The pranas are situated in these marmas by virtue of their nature, hence trauma to these points leads to physical disturbance or even death. Acharya dalhana defined marma as *श्मर्म मारयन्ति इति मर्माणिश (डल्हण)* . i.e marma are sensitive/ vulnerable points that may cause death or severe pain when traumatized.[1] *Marma* are classified on the basis of:

On the basis of traumatic effect these are: *Sadhyopranahara*, *Kalantrapranahara*, *Vishalyaghana*, *Vaikalyakara*, *Rujakara*.

On the basis of composition of *Marma* are: *Mamsa Marma*, *Sira Marma*, *Snayu Marma*, *Asthi Marma*, *Sandhi Marma*.

On the basis of location *marma* are: *Shakhagata*, *Kosthagata*, *Urdhvajatrugata*.

There are 37 *Marma* present in *Urdhvajatrugata* region and *Adhipati Marma* is one of them.[2]

***Ayurveda* and *Adhipati Marma*:**

The word adhipati means chief or commander, top of head.

Marma	Number	On the basis of location	On the basis of structure	On the basis of Traumatic effect	Measurement	Situation
Adhipati	1	Urdhvajatrugata	Sandhi	Sadhyopranahara	½ angula	Deeper and in line with romaavarta

According to Acharya Sushruta:

मस्तकाभ्यन्तरातउपरिष्टातसिरासन्धिपातोरोमावर्तोधिपतिः, तत्रापि सधः एव। (सु०शा० ६ध्र२८)

It is situated inside cranium superiorly at the confluence of siras. These points lies under romaavarta and injury to them leads to immediate death.[3]

According to Acharya Dalhana:

मस्तकाभ्यन्तरोपरिष्टादिति मस्तकस्याभ्यन्तरोर्ध्वमित्यर्थः, सिरासन्ध्योः सन्निपातो रोमावर्तः, बहिरस्य लक्षणमुपरिष्टाद्रोमावर्तः, एतत् संधिमर्म अर्धांगुलप्रमाणं च । (डल्हण) ।

It is situated inside cranium superiorly at the confluence of siras. These points lies under romaavarta and it is a sandhi marma with half angula measurement.[4]

According to Acharya Gananatha Sen [PRATYAKSH SHARIR]:

महासिरावर्तोनाम पूर्वोक्तानां पञ्चानामपि सिरासरितां संधिसन्निपातः पश्चिमकपालस्याभ्यन्तरतलकेन्द्रस्थ । तमधिपतिसंज्ञं सद्योमारकं मर्मेति वर्णयन्ति प्राञ्चः ।

Adhipati marma is confluence of five big siras within paschima kapaliya asthi (occipital bone). It is sadhyopranahara marma.

पश्चिममध्यसीमन्तयोस्तु संधिस्थलं शिवरन्ध्रमधिपतिरन्ध्रं वा नामतदाख्यमर्मधारणात् ।

Some says in division of bones, joint place of *paschima seemanta* (lambdoid suture) is *shivarandhram* (posterior fontanelle) also reffered to as *adhipati marma*.[5]

Anatomy in modern context:

If above description is analysed in modern context *adhipati marma* located externally on scalp where whorls of hairs present (*romaavarta*) i.e posterior fontanelle or lambdoid point and internally deeper in line of *romaavarta* there is presence of dural venous sinuses.

From above description we see following surface anatomy of adhipati marma in modern context. Occipital bone, parietal bone, lambdoid suture, superficial temporal artery, occipital artery, saggital sinuses, straight sinuses, occipital sinuses, right and left transverse sinuses, confluence of sinuses, medulla oblongata.

Occipital bone:

It consists of squamous, basilar and lateral parts. The squamous part of occipital bone is connected to parietal bone by lambdoid suture. The outer surface of squamous part presents external occipital protuberance, external occipital crest, highest, superior and inferior nuchal lines.

Parietal bone:

Its outer surface shows prominence called parietal eminence/ tuberosity, superior and inferior temporal lines. Its inner surface presents a groove for meningeal artery, four angles are anterosuperior (bregma), anteroinferior or sphenoidal (pterion), posterosuperior (lambda).

Lambdoid suture:

It is serrated interlocking joint between two parietal bones and occipital bone of skull.

Superficial temporal artery:

It is a terminal branch of external carotid artery. It originates at level of neck of mandible. After traversing the parotid gland, it runs superficially to zygomatic process of temporal bone. When the superficial temporal artery enter the scalp in temporal region, it gives off two branches that supply skin and pericranium of frontal and parietal region.

Occipital artery:

The occipital artery supply several muscle of posterior neck along with trapezius, sternocleidomastoid and occipitofrontalis muscles.

Additionally it gives meningeal branches to duramater (meninges) and cutaneous branches to skin of neck, auricle and occipital region of head.[6]

Dural venous sinuses:
Complex network of venous channel which drain blood from brain and cranial bones. These are valveless and absorb CSF from arachnoid granulation. These sinuses receives emissary veins help in maintainence of venous pressure both within and outside cranial cavity.

Confluences of sinuses:
It is meeting place of posterior end of superior saggital, straight, occipital and right / left transverse sinuses.[7]

CSF absorption takes place through these sinuses. CSF is modified tissue fluid. CSF is formed at a rate of about 500 ml each day which is three to four times as much as total volume of fluid in CSF. About two third or more of this fluid originates as secretion from choroid plexuses in the four ventricles, mainly in lateral two ventricles. Additional small amounts of fluid secreted by ependymal surfaces of all ventricles and by arachnoidal membrane; a small amount comes from brain itself through perivascular spaces that surround the blood vessels passing through brain.

The fluid secreted in the lateral ventricles passes first into third ventricle; after addition of minute amount of fluid from third ventricle, it flows downward along the aqueduct of sylvius into fourth ventricle. Finally the fluid passes out of the fourth ventricle, through small openings, two lateral foramina of luschka and midline foramen of magendie, entering the cistern magna, a fluid space that lies behind medulla and beneath cerebellum. The cisterna magna is continuous with subarachnoid space that surrounds the entire brain and spinal cord. Almost all the CSF then flows upward from cisterna magna through the subarachnoid spaces surrounding cerebrum. From here, the fluid flows into and through multiple arachnoid villi that projects into large saggital venous sinus and other venous sinus of cerebrum. Thus, extra fluid empties into venous blood through pores of these villi.

Absorption of CSF through arachnoid villi:
The arachnoid villi are microscopic fingerlike inward projections of arachnoidal membrane through the walls and into venous sinuses. Conglomerates of these villi form microscopic structure called arachnoidal granulations that can be seen protuding into sinuses. The endothelial cells covering villi have been shown by electron microscopy to have vesicular passages to allow relatively free flow of (1) CSF (2) Dissolved protein molecules (3) even particles as large as red and white blood cells into the venous blood.[8]

AIM:
- To study *Adhipati Marma* and its applied aspect with modern context.

OBJECTIVE:
- To study *adhipati Marma* from *ayurvedic* literature.
- To study the related structure of *adhipati Marma* and its applied aspects from modern literature.
- To draw a conclusion of *adhipati Marma* and its applied aspects relations with modern context.

MATERIALAND METHOD:
- Literature regarding *adhipati Marma*
- Literature regarding confluences of sinuses

DISCUSSION :
- **Discussion as e***स्तकाम्यन्तरातउपरिष्टातसिरासन्धिपातोरोमावर्तौ* **:** *उपरिष्टातरोमावर्तौ* i.e *adhipati marma* is situated on head at *keshavarta*. That is lambda point. It is joining of suture of parietal and occipital bone. *मस्तकाम्यन्तरात सिरासन्धिपातो* i.e inside cranium deeper in line with *romaavarta*- there is presence of superior saggital sinus and confluence of parietal emissary veins present here.
- **Discussion as *sandhi marma*:**

Externally *romaavarta* is place of posterior fontanelle i.e *shivarandhram* (junctions of two parietal and occipital bone). That is why it is an *asthi- sandhi marma*.

Internally landmark is deeper and in line with *romaavarta* there is presence of confluences of sinuses and emissary veins. That is why here it is *sirasandhi marma*.

Discussion as *sadhyopranahara*:

Injury or rupture of sinuses
↓
Leads to venous sinuses thrombosis
↓
Obstruction leads to increased venous pressure
↓
Impairs CSF reabsorption and venous hemorrhage
↓
Resulting in death

The arachnoid villi function like "valves" that allows CSF and its content to flow readily into blood of venous sinuses while not allowing blood to flow backward into opposite direction. Normally, this valve action of villi allows CSF to begin to flow into blood when CSF pressure is about 1.5 mm greater than the pressure of blood in venous sinuses. Then, if CSF pressure rise still higher, then the valve open more widely, so that under normal conditions, CSF pressure never rises more than the pressure in cerebral venous sinuses. Conversely, when injury occur at this *marma* place, then villi becomes blocked by large particulate matter, by fibrosis, by excess of blood cells have leaked into CSF. Such blockage causes high CSF pressure resulting in venous hemorrhage resulting into death. That is why *adhipati marma* is *sadhyopranahara marma*.

From above observation we see that adhipati marma has following structures:

Mamsa	Frontoocipitalis muscle
Sira	Superficial temporal artery, occipital artery
Snayu	Galea aponeuritica
Asthi	Occipital and parietal bone
Sandhi	Lambdoid suture

CONCLUSION :
- *Marma* are vital points which should be protected from injury.
- *Adhipati* is *sandhi marma* i.e both *sira* and *asthi sandhi marma*.
- *Sadhyopranaharata* of *adhipati marma* is due to disturbance of CSF reabsorption.
- So following structure related to *adhipati marma* : posterior fontanelle, lambdoid point, confluences of sinuses.

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