Seat of vata as majja and majja as brain

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Abstract-
In Ayurveda, vata is one among the three basic humours that plays a major role in balancing the health. Most of the vata disorders discussed in Ayurveda are being diagnosed under neurological disorders in modern medicine. It is a known fact that vata has predominance of vayu and akasha mahabhuta having dual properties of sound (shabda) and touch (sparsh), which is one of the characteristic function of the brain.
Majja, one of the sapta dhatus is located inside the bones.
The femoral bone has the largest quantity of majja as compared to other bones, hence we can say that porosity of femur or femoral bone, is nothing but seat of vata and there is a good porosity within cranial cavity (spongy bone) where the majja (brain) is located, proving that there is a vatasthana.
Hence an attempt has been made to understand the seat of vata as majja and majja as brain.
Key words: vata, majja, brain, cranial cavity, mastishkha or mastulunga.

Introduction –

Acharya Sushruta is considered as father of surgery and according to Sushrut Samhita, no living being is considered devoid of Doshas (Vata, Pitta and Kapha). And Vata dosha is considered as the chief dosha among all the three doshas. Only Vata is capable of mobility and its force keeps the other two Dosha, Dhatu and Mala in motion.
The word Vata is derived from the root "Va" with suffix "Ta" means Gati (to move). It has been told that there can be no creature without Vata. Majja means bone-marrow (asthi-majja) & is associated with the entire nervous system, which is encased within bone like bone marrow.
According to Acharya Sushruta, there are seven Dhatus in body-Rasa(lymph), Rakta(blood), Maamsa(muscles), Medas(fat or adipose tissues), Asthi(bone), Majja(bone marrow), Sukra(semen, sex hormone). Majja Dhatu is the second last Dhatu formed as -unstable(poshaka) Asthi Dhatu flows through the Majjavaha Srotas into the Majja Dhara Kala and is digested by the Majjagni. During formation of Asthi Dhatu or Bone, Vata creates spaces in bones. These spaces are filled with nourishing tissues of Medas or fat which is
known as Majja or Bone marrow. The final essence of the Asthi Dhatu which is a semisolid substance becomes Majja in the process of metabolism. Majja Dhatu fills the bones, nourishes & strengthens body, as described by Acharya Sushruta.

The materials have been collected from the ayurvedic texts i.e Brihattrayee & laghutrayee, mainly- Sushrut samhita,Charak samhita & Ashtang hridya & modern texts.

**Vata Dosha sqaana**
(common site of vatadosha)
The nature of tridoshas is all pervading in the body, but the organs where the dosha mainly functions has been mentioned as its main site.

**Aims and Objects:**
To prove seats of vata as majja & majja as brain

**Materials & method –**

As per the definition, there are different types of bones which are progressively formed. Majja is formed after the formation of asthi. Majja is located within the bone. Cranial cavity is made up of kapalasthi, it forms the whole cranial cavity, & within that there is a nervous tissue/ brain, which is as per the definition nothing but majja, Hence it proves brain or (Masthiksh) is similar to the Asthi – Majja of long bones or small bones (Anvasthi).

As per the definition, chiefly, femur is having largest quantity of majja as compared to other bones. Hence we can say the porosity of femur or femoral bone having majja inside it, is nothing but seat of vata. Hence we also can say there is a good porosity within cranial cavity (spongy bone) & within cranial cavity, the majja (i.e brain) is located. Hence we can say that there is vatasthana within kati & sakti, same can be applied to the cranial cavity. So cranial cavity is also a seat of vata, Hence we can say brain is also a seat of vata.

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Sound is perceived by ears, sound is a property of akasha (ether) mahabhuta, composition of vata includes akasha. Ayurveda has suggested karna-puran (filling of ears with oil) as a part of daily regimen (dinacharya).

अंग(Bone)
Bones and vata dosha have a special relation called as ashrayayai bhav. Bones are ashraya (media) and vata dosha is ashrayi (dweller). For instance, cranial bone – ashraya and mashtiksha or brain-ashrayi. Body activities are mainly concerned with body joints and any activity cannot take place without vata dosha.

स्नान(sense organ of touch is skin)
Skin perceives different types of touch sensations like cold, hot, soft, hard. Vata dosha is composed of vayu and akasha (air and ether). Touch is property of vayu mahabhuta. Hence relation of vata dosha with touch sensation is established.

5 forms of vata
- प्राण वायु
- उदन वायु
- ध्यान वायु
- समान वायु
- अपान वायु

प्राणवायु
प – guarding, protecting, ruling.
प्र – great
अन् - to breath, to live
प्राण- spirit, vitality to live
Organs of vitality or sensation (mastishka or brain)

Site-

कण्ठा विश्वास्वास्तिकाः ||
Head and chest are 2 main sites of prana vayu. Head, throat, mouth, tongue, nose, heart, mind and intelligence are also included.

उदनवायु
उद्र् upwords, upon, above
बाण giving
उदन- one of the fine vital airs or fine winds which rises up the throat & enters into the head.
Sites –

उदर् स्थानाः उदनस्य
वायुलालिष्टतः
बाणाक्रान्तिक्रीयद्वारायनकृतिक्रियाः
अ- ह्- म्- १२/५
The chest is the seat of udana, it moves in the nose, umbilicus & throat. Its functions are initiation of speech, efforts, enthusiasm, strength (capacity of work), colour (complexion) & memory (awareness). Though the seat of udana vata is held to be the throat, its main function is speech which is produced by larynx hence its higher centre is broca’s area. The areas for memory are considered to be hippocampus (processing) and other parts of medial temporal lobes of brain, in association with several cortical areas like frontal lobes for ‘working memory’
Vyana
= air/wind
= to draw in the breath through the whole body.

Site –

Vyana ध्वनिशक्ति... /अ ्.ह.० १२/६-७

Vyana is located in the heart, move all over the body in great speed, attends to functions such as walking, bringing the body parts downwards, lifting the body parts upwards, opening & closing of eyes etc. Generally all the activities concerned with the body. Vyana implies the motor system and activities of reticular activating and inhibitory systems. It is mahajava (of great speech) and is involved in gati (movement), avakshepa (flexion), utkshepa (extension) all being the functions of the locomotor system and the area for its control (the term mahajava can be interpreted as nerve impulses of high velocity) /अ ्.ह.० १२/६-७

Samaana vaayau:
samaana – same identical, uniform, homogenous (function of grahani)
holding the middle between two extremities (between vyana & apan), middling.

Site –

समानाविनिमीपस्या|
कोष्ठगतिविर्भत्तमः /अ ्.ह.० १२/८

The main site is koshtha. Samana is located near the fire (digestive activity), in the koshtha (alimentary tract & other abdomen viscera), withholds the food in the (alimentary tract for some time), helps in digestion, separates the sara (essence) and kitta (waste) and eliminates waste out of body.

According to charak – it is svedavaha, ambuvaha, doshavaha srotas.
According to sushrut – its site is near agni, stomach and large intestine.

According to vagbhat – all above and near shukra and artava.

All the neuro-hormonal influences of digestion, including the role of parasympathetic nervous system and the ENS (enteric nervous system) are the functions of samana vata. The two networks of nerve fibres that are intrinsic to the GI tract are mesenteric plexus (anurebach’s plexus) between the outer longitudinal and inner circular muscle layers and submucous plexus (meissner’s plexus) between the middle circular layer and mucosa. These together are known as the enteric nervous system. These contain sensory and motor neurons, and in the opinion of many authors this is 6 displaced part of CNS concerned with regulation of GI function. Though it is connected extrinsically to CNS with sympathetic and parasympathetic fibres, it functionally independent.

/अ ्.ह.० १२/८

Apana vaayau
अप – away, inferior
अपन – Breathing out respiration, one of the five life winds in the body which goes downwards & out at the anus.

Site –

अपनोपानाः|श्रीगिरिविनिमेन्द्रोपचारः.../अ ्.ह.० १२/९

Mainly lower abdomen or pelvic area. Apana vayu has the control on organs around umbilicus and in pelvic girdle, urinary bladder, genitals, rectum and thigh. Apana is located in the pakvashaya (large intestine), moves in the waist, bladder, penis (genital) & thighs & attends to the functions such as elimination of semen, menstrual fluid, faeces, urine & foetus. Expulsion of material from the lower part of the trunk through orifices located at the anterior and posterior perianal triangle with help of sphincters for control, are the
main functions of apana vayu. This faculty has 3 parts (as in most neurological activities) an ascending limb to conduct impulses, a processing zone to determine action to be taken. Descending limb for executing appropriate motor activity. It is concerned with involuntary functions.

### Qualities of vata

<table>
<thead>
<tr>
<th>According to Charak</th>
<th>According to Sushrut</th>
<th>According to Vagbhat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruksha</td>
<td>Ruksha</td>
<td>Ruksha</td>
</tr>
<tr>
<td>Shita</td>
<td>Shita</td>
<td>Shita</td>
</tr>
<tr>
<td>Laghu</td>
<td>Laghu</td>
<td>Sukshma</td>
</tr>
<tr>
<td>Sukshma</td>
<td>Muchschara</td>
<td>Chala</td>
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<tr>
<td>Chala</td>
<td>Vishada</td>
<td>Khara</td>
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<tr>
<td>Vishada</td>
<td>Khara</td>
<td>Vibhu</td>
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<tr>
<td>Khara</td>
<td>Vaishhtambhya</td>
<td>Ashukari</td>
</tr>
<tr>
<td>Daruna</td>
<td>Avyakta</td>
<td>Balitvad</td>
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<tr>
<td>Amurtatva</td>
<td>Tiryak</td>
<td></td>
</tr>
<tr>
<td>Yogavahi</td>
<td>Ashukari</td>
<td></td>
</tr>
</tbody>
</table>

**Functions of vata dosha–**

- कायुक्तप्रधानतः प्राणोद्योगन्यायानायानावपक्षम् । । ।
  
  सर्वः कर्माकारः सर्वः स्वास्थ्यावलोकितः ।
- कायुक्तप्रधानतः प्राणोद्योगन्यायानायानावपक्षम् । । ।
  
  सर्वः कर्माकारः सर्वः स्वास्थ्यावलोकितः ।

The vata in its normal state of functioning sustains all the organs of the body. It consists of prana, udana, samana, apana and vyana. It prompts all types of actions. It restrains and impels the mental activities. It co-ordinates all the sense faculties and helps in enjoyment of their objects. It brings about compactness in all tissues elements of the body. It brings together different parts of the body. It prompts speech & is in the origin of touch as well as sound. It is the root cause of auditory and tactile sense faculties & the causative factor of joy and courage. It stimulates the digestive fire and absorbs the doshas & throws out the excreta. It creates the gross and the subtle channels & moulds the shape of the embryo. It is indicative of the continuity of the span of life.

### Brain – Location & Functions

<table>
<thead>
<tr>
<th>Cerebrum</th>
<th>Cerebellum</th>
<th>Brain stem</th>
</tr>
</thead>
<tbody>
<tr>
<td>The cerebrum is the largest part of brain the outer part is called the cerebral cortex.</td>
<td>The cerebellum is about the size of pear.</td>
<td>The brain stem is located at the bottom of the brain above the neck, where it connect the brain to the spinal cord.</td>
</tr>
<tr>
<td>Divided into 2 parts called Right and Left hemispheres</td>
<td>Tucked under and behind cerebrum.</td>
<td>Divided into 3 parts. Medulla, pons and mid brain.</td>
</tr>
<tr>
<td>Function-Responsible for thinking, senses producing and understanding languages, memories, eating, emotions, body temperatures, sleeping, hormones.</td>
<td>Function- controls muscles movements, balance and coordinations.</td>
<td>Function – Responsible for automatic survival functions such as breathing, heartbeat and digestion as well as reflexes such as sneezing, swallowing and coughing.</td>
</tr>
</tbody>
</table>
Conclusion:

Brain and majja dhatu-

- मस्तिष्क-मृत्तिक (च. - भू. - भ. / १९)
- सिरोमुल्लात्र प्राधानीनिधियानाः (च. - भू. १ / ११)

Head is root of all organs. (Head is chief organ.)

- मस्तिष्क-मृत्तिक (च. - भू. - भ. / ११)
- सिरोमुल्लात्र प्राधानीनिधियानाः (च. - भू. १ / ११)

Reference from ayurvedic texts show that brain (mastishka or mastulunga) is made of majja dhatu, which is also known as fat inside the cranium (sirogata sneha) or non-diluted (avilina) ghruta.

The root ‘Ana’ means to move, the one which moves enthusiastically is known as prana , the seat of prana is considered as hradya (the brain).

- मस्तिष्क-मृत्तिक (च. - भू. - भ. / ११)

Nine hundred snayu (nerves) with their roots in mastulunga (brain).

- मस्तिष्क-मृत्तिक (च. - भू. - भ. / ११)

Hence it is proved that the seat of vata is majja & majja is brain.

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