Respiration in Ayurveda - Sharangadhara’s Perspective

H Pampanna Gouda¹*, Govind Raju² and Seema M B³

¹Dept of Basic Principles SDM College of Ayurveda, Udupi, Karnataka, India
²Dept of ShareeraRachana, SDM College of Ayurveda, Udupi, Karnataka, India
³Dept of RS & BK SDM College of Ayurveda, Udupi, Karnataka, India

Abstract

Ayurveda system of medicine is believed as divine and has eternality in decent to earth. This decent underwent change, fulfilled the needs of the life sciences and refined many times through the philosophical thought of schools to attain the present forms of Samhita. This is land mark change where in the then prevailing schools of thoughts (Darshana) churned the knowledge obtained in the form of tri-sutra Ayurveda much of similarity like the Tantra believed to be 6000 to 4000 BC to a more evolved form and converted them into Samhita by the end of 300 BC. One such metamorphosis happened, which the historians call as post Shodala period or simply the medieval period the post 12th Century AD and this period is learnt as era of Laghu Trayee; Madhava Kara, Sharangadhara and Bhavamishra works were composed Madavana Nidana, Sharangadhara Samhita and Bhava Prakasha respectively; underneath this period the legendary commentaries of Chakrapanidutta, Dalhana, Arunadatha and Hemadri for the classical Bihat Trayee was at rampant pace and critical scientific analysis went on.

Here is a humble attempt made to sketch out the Respiration system in relevance to its anatomy and physiological relevance by accessing the ‘Sharangadhara Samhita and its commentators’. The opinions of commentaries of Sharangadhara Samhita are of importance to arrive at any conclusions.

Keywords

Nabhi, PraanaPavana, Vishnu-padambritha, Ambara-peeyusha, Sharanaadhara
INTRODUCTION

The global scientific perception regarding the understanding of the respiratory system has evolved over 2600 years. The following extract of an article entitled ‘the history of respiratory gases’ is the mirror reflections in the progress of the development of Respiratory System counted on the time line of the works of the western world1.

<table>
<thead>
<tr>
<th>Duration</th>
<th>Persons Name</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th B.C</td>
<td>Greeks</td>
<td>Pneuma the substance meant breath or soul, and essential for life.</td>
</tr>
<tr>
<td>2nd A.D</td>
<td>Galen</td>
<td>elaborate cardiopulmonary system which stood for 1400 years 1. Pneuma from the lungs mixed with blood in the left ventricle to form vital spirit. 2. Pores in the interventricular septum helps this mixing</td>
</tr>
<tr>
<td>13th AD</td>
<td>Ibn al-Nafis Arab physician</td>
<td>Blood flowed from the right to the left ventricle of the heart 13th AD</td>
</tr>
<tr>
<td>16th AD</td>
<td>Michael Servetus</td>
<td>Challenged the above statement</td>
</tr>
<tr>
<td>17th AD</td>
<td>Torricelli</td>
<td>atmospheric pressure physiologists in Oxford Clarified the properties of inspired gas that were necessary for life.</td>
</tr>
<tr>
<td></td>
<td>Lavoisier</td>
<td>Clearly elucidated the nature of the respiratory gases, oxygen, carbon dioxide and nitrogen.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Oxygen was consumed in the lung</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Actual metabolism took place in peripheral tissues proved to be a very elusive concept</td>
</tr>
<tr>
<td>20th AD</td>
<td>Pflüger</td>
<td>1. Controversy about whether oxygen was secreted by the lung. 2. Momentous strides were made on the. A critical development in the was the the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Understanding of pulmonary gas exchange, particularly the role of ventilation-perfusion inequality</td>
</tr>
<tr>
<td></td>
<td>During and shortly after World War II</td>
<td>Introduction of blood gas electrodes, and these have transformed the management of patients with severe lung disease</td>
</tr>
</tbody>
</table>

On the contrary in Ayurveda right from the works of Brihattrayee the respiratory system was part of Koshta a collection of 15 visceral organs popularly known as MahaNimna functionally and for patho-physiological understanding identified under AmaPakwashaya. The vital structures like phanamarma which are of subtle nature are identified in the respiratory tract. The component parts of upper and lower Respiratory are mentioned. If one analyze properly; the dependency of Upper Respiratory tract in producing Lower Respiratory tract manifestations are also dealt under Nidana-arthakaraRoga. In Sharangadhara Samhitathe respiratory system is dealt in a small context in a 4 line sloka, this descriptions not only speaks on anatomical aspects but yield fair amount of details on physiological aspects also.
MATERIALS

This is a literary exploration on text called Sharangadhara Samhita written in 14th century AD, and critically analyzing the commentaries written in 16th (Deepika) and 18th (Goodartha Deepika) Century AD on Respiration in Ayurveda.

REVIEW OF LITERATURE

Mula:
Nābhisthaprāṇapavahnāṣprśtyāḥr̥tikamalāntaram. 48
Kaṇṭhābhīrvinirvidātipātuviṣṇupādāntam.
Pītvācārīṣaṁpunarāyāti vēgataḥ.49.
Prīṇayandēhamahikālājīvayañjaḥbrāntānāmam.

Translates to: The Pranavayu which is in the Nabhi, touching the heart, comes out through the throat to drink Vishnupadamrta. After drinking the Ambarapiyusha, it comes back quickly into the body to nourish the whole body and to enliven the digestive fire in the stomach.

Deepika (the commentator): Praanapavana is pranaanila i.e., pranaashrīthī-vaṇy is to be considered. Praana including Agni, Soma etc, are at Nabhi. The praana which is of panchamahaboota spread through the body. Praana residing at nabhīis dependent on Anna(Panchabouthika) etc, and takes all the functions of body, similarly as that of the spokes of a wheel. The brahmaṇaranda is at nabhi as a wheel represent at the centre supported by 24 spokes of a wheel. As that of spider web the life circulates in such epicenter.

Pancha mahabootha and its relations with praana: The functional of the body are established on the dependent factor of Praana. This praana is panchabouthatmaka in nature and constantly nourished by Anna a source of Pancha mahaboota.

Sira as a intermediate structures between Nabhija Praana and Shareera avayava: Relation between Nabhi and Shareera is linked with siras. The importance of giving the example of spider and its web is to show the reticular structuring of siras.

Brahmaranda and its role in Respiration:
The shushumna (spinal cord) possessing praana and climbs up to Brahmaranda. The embedment of the praana is like the...
light emitted by crystal of *Spatika*. As the *ushna*, in the form of *praana* at nabh. This is of importance as the reaching of Praana through Sushumna explains the involvement of Nervous System and the nature of nervous conduction.

The circulation pattern of praana *isaasya, nasika* from Nabhi through *Hrudaya* similarly as that of mud of the lotus. This Praana helps in the production of vocal sound, inhalation and exhalation. This praana is detrimental in the *Swasa* and *kasa*.

The fate of *Pranaanil* shall have a course to pass through *hrudaya* and *kamalantaram* that is in-between *Hruday* and *pupusha*, in the process of exhalation reaching to *Kantha-mulaSiras produces vocal sounds*. The mentioning of mud and lotus is to differentiate the structural entities that only play supporting role but also to exclude the active involvement in the respiratory gas exchange process.

Having drunk the Vishnu *padam* and the *Brahma-randra-ashritha-amrutha-peeyusha* nourishes. As stated by acharya ‘the chakra (Wheel) possessing the 1000 *patras* in *Brahma-randra* has *sudhadhara* (whitishness) and Such *sudhasara* with holding and become cause for increasing the deha. *Bharata-mula* considers ‘the *brahmarandra* is the site of life, as it posses the *Sudha*, *Trupti* and *geethadi* activities shall get fulfilled.

Having taken the *Vishnupadham* and at *brahmarandra* the nectar present their under goes nourishment. The multi layered brahma Randra responsible for nourishment, is credited for sudhadhara a location of Life and responsible to mental functions like Trupti and speech activity. Above literature suggest a link between the role of Brhma Randra and Vishnupadamritham bringing trupti etc mental functions in the process of nourishment.

The *anila* (vata) present in *ambara* (sky) inhaled at very fast reaches Brahma-randra and bring *karya* of *preenana* there by help in nourishing all the body part i.e., *head to legs*, even the *jeeve* and *jathara Agni*. *Jeeva* is being cited in the sloka and jeeva is *brahma Randra sthitajathar-ana/ pachakaAgni*; which brings strength to the digestive mechanism. The second process of Brahma Randra after nourishing the higher mental activity is to bring somatic body nourishment there by inhaled air reaches out to jeeva. The jeeva if taken as cellular level nourishment then the cellular respiration is defined. If the jeeva definition is limited to *brahma Randra sthitajathar-ana/"
pachakaAgni then the kindling of digestive mechanism is accepted. It can be recollected that seheshanaomaya anugraham karothis stated in A.H.Su.12/12. Therefore the process of brahma Randra nourishing the deha including Pachaka agni is justified along with cellular respiration. The consideration of deha is to justify the jeevaanala hence it is stated separately. Deha is a word to be used for angapratyanga and its vibhaga all are considered. The word jheevaanila is to justify the mula of such avayava. Hence the jeeva is different from the shareera. Henceforth read separately. As stated by Charaka in Grahaniaadhikara- ‘Life span, complexion, strength, health, enthusiasm, corpulence, lustre, immunity, energy, heat processes and vital breath – all these depend on body –fire. One dies if this fire is extinguished, lives long free from disorders if it is functioning properly, gets ill if it is deranged, and hence Agni (digestive fire) is the root cause.

Here the vayu-karya-satva are explained. Praana as vata there in the hrudayasthayavayu having taken Vishnupad-amrutham leaves out through the kantha outside the body; having taken Ambarapeeyusha repeats and initiates the vegas. Touching the Hrudaya kamalanthara (mediastinal?) that which is at nabhi the jatara Agnijeevayathi i.e., entire body and plans for further activity. If anvay is applied as that which is at nabhi the praanapavana and read then; in humans the vata which is there at nabhi passes through the hruday-kamalantara by touching. Hrudayais for praanapavana, gudaisal for apaana, saman is for Nabhi etc, has been dealt; which conflicting the Nabhi-sthitapraanapavana? That which is below the nabhi is considered. For this clarification is Praninam-prananabhishthaaspraana siraa Nabhi vayapashraya; which means in humans the prana which is at nabhi is as good as that prana sited at shira. Which only connotes the meaning as that which is situated at nabhi but have avrutha up to shira; the slimily sited in this context is as that of the spokes of the chakra being the nabhi vata³.

GoodarthaDeepika (the commentator): The praana word is used to depict the difference from praan-vayu and its pratyangas. The word praana is having a meaning of that which is carried by Indriya, in the form of jeeva-athmataetc. Dhanavantari while considering the siravarnanam said ‘the praana residing at nabhi takes the shelters of Praana. It covers up to
sira as that of wheel with its spokes covering the wheel. Praana is of five pranas, and also read as 10 types as praanavayuetc, as stated ‘the ten types of vayu are as praanavayuetc, shall be moving as experienced by vasudeva. Similarly as per the Ravana ‘speculated praana once again unwinds ‘the speculated praana as 10 types is above of the speculated one which is perceived by Yogies and such 10 types reaching out to Parameshvara-hrudaya once again under go divisions, so such a divisions are not the faults. Sira Shareera are brought in where the praana is present as that of spokes and by taking names as vasudeva, Ravana and Yogies the 10 classifications of vata is read.

To add up to this the resent writer’s opinions:

Even Dr Himasagar commenting on Pranavata out of the body correlating to death appears out of context. This is because a system has an input, a process of change or a product to be produced and the expulsion of waste or utility of by product. The Respiratory system when included under the Amapakwashay invariably has these components and to be very precise it’s a dynamic process. An input in the form of Ama, the involvement of process ‘punarayativegata’ energy being generated and the lack of mentioning of waste or by products.

Sharangadhara mention about the Pranavata going out of the body from the navel, through the heart for taking the Vishnupadamrta or Ambarapiyusa only to come back to nourish the body and digestive fire. Pranavayu is seated in the chest according to previous statements. But, saying that it is going out from the navel shows that he must be referring to the fetal state. Because the Nabhi or the navel is the seat of Pranasiras, there is no harm in saying that Pranavayu is at the Nabhi as supported by Adhamalla and Kasirama Vaidya. Vishnupadamrta and Ambarapiyusa can be understood as synonyms of Oxygen, if it can be interpreted thus.

DISCUSSION

The above verses describe the process of Ayurvedic respiration uniquely found in Sharangadhara Samhita. The sloka principally speaks on both the inhalation and exhalation as primary respiration process. But the second stanza is the literature pertaining to secondary respiration or the end manifestation of the process of
Respiration. The metabolism or cellular metabolism is dealt. The simplicity of the subjects, the ability to go to the depth and establishing complex algorithms of respiratory gas exchange are well understood. Besides which the production of the vocal sound the exhalation is used is clearly explained.

If one considers making out *panda-vyakya* of the above explanation in the relevance of *Shareera*-terminology the extract emerges: *Vishnupadamrta* and *Ambarapiyusa* can be understood as word equal to the inhaled gases and diffusion of oxygen in to *Nabhi-sthitha-Brhma-randra*. *Praana-ashritha-vayus* *Pranahas Agni, Soma* etc, are at *nabhi* and from *nabhi* spreads through the body. *Brahma-randra-sthita-jathara-anala* and *it is pachaka-Agni*; which brings strength to the digestive mechanism.

The *brahmarandra* is at *nabhi* as a wheel represent at the centre supported by 24 spokes of a wheel. But the other embedment of *Brahma Randra* is; the *praana* is like the light emitted by crystal of *Spatika* and *geeta-trupti* we need to make one more *Brahma Randra* situated in brain. The considering of *deha* is to justify the *jeeva-anala* hence being stated separately. *Deha* is a word to be used for *anga-pratyanga* and its *vibhaga* all are considered. The word *jheeva-anila* is to justify the *mula* of such *avayava*. Hence the *jeeva* is different from the *shareera*.

*Paana* as *vata* there in the *hrudayastha-vayu* having taken *Vishnu-padamrutha* leaves out through the *kantha* outside the body; having taken *Ambarapeeyusaha* repeats and initiates the *vegas only explains the exhalation and inhalation. *Nabhi-sthitha-pranapavana* should never be implicated as prana vata in *Nabhi*, it only means *Nabhi* shtitha pranaa possessing *Anila* etc pancha mahabootha.

**INFERENCE**

The process of explanation of *punarayativegatha* is intended for the process of kindling the *Agni* and bringing out energy for the life.

If we look out the entire process of the literature though it depicts the process of ordinary respiration but on myopic analysis it brings about the depth understanding of our *acharyas*. *Kantebahirniryath* spells out the exhalation in process and quick inhalation of *Vishnu padamrutha* and the later on kindling of *agni* speaks by volumes of the respiration occurring at cellular level. *Brahmar and raashrithaamruthapeeyusaha*, if it is after ramification of the
nabhisthitahapraṇa into and upto the cellular levels, need to be debated. It seems Goodartha Kara lost completely the dhashavidhapraṇa and went on establishing Ravanās aspects of nadiparikshaprabhedā for vathadosha.

CONCLUSION

1. Pranavayu is being differentiated from other praanaas having ashraya of Panchamahabootta
2. ‘The brahmarandra is at nabhi as a wheel represent at the centre supported by 24 spokes of a wheel’ only reflects formation and role of placenta in fetal circulation. There is Brahma Randra in the brain bring higher mental functions of Trupti and Geeta adi vak prvruthi.
3. The Anatomical positions of Hruday and pupushawere known and relation of respiration was established.
4. Having taken the Vishnupadham and at brahmarandra the nectar present their under goes nourishment is a clear indication that the component of the process of respiration has to dissolve into the circulation in order to nourish.
5. 1000 patras in Brahmarandra has sudhadhara and the sudhasara is responsible for the physical activity indicates a process that convert and become means for physical activity
6. The separation of the words brahma-randrasthitajatharanalapachaka Agni and jeevaanala by stating themula and Avayava relations.
7. The Dehaanila karma has to be taken for the secondary mitochondrial respiration or cellular respiration.
REFERENCES