



Study of Physiological Changes on *Pranavaha Strotas* according to Different *Rutus*

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Abstract

Modern civilizations have changed human life considerably with both good and bad effects on human health. Lifestyles have totally changed and life is too much faster these days where, people have to work round the clock in unhealthy and polluted surroundings and under stressful situations.

Ayurveda compares the human body with nature; *Purusha* means body and *loka* means nature, *tulyatvam* means similarity. Whichever (*yantra*) elements are present in the nature are also present in human body and vice versa. This principle is also called as “*Pinda bramhand nyaya*.” *Rutu* means the movement of time as a seasonal change. Time brings changes in the *gunas* or primordial qualities and in the *doshas* or pshycobiological humors. Seasonal changes influence all living organs. The *rutus* affect the *doshas* either by increasing the natural *gunas* of *dosha* or by decreasing them.

Pranvahstrotas is the main *strotasa* out of the 13 *strotasa* present in the human body. According to the Ayurvedic *samhitas*, the *moolsthan* of *pranvahstrotas* is *hridaya* and *mahastrotas*. But there is direct relation between *pranvahstrotas* and respiratory system.

The three *doshas* that is *vata*, *pitta* and *kapha* present in the human body have similar functions. Like *vayu*, *surya* and *Chandra* present in the outer atmosphere or universe.

So there is change in the human body according to the changes that occurs in the outer atmosphere out of the three *doshas*, *Vayu* mainly protects supports and directs the living creature. It is directly related to the respiratory system and has effect on it.

Thus it is essential to study about the changes in the human physiology related to *pranvah strotas*.

Keywords

Pinda Bramhand Nyaya, Doshas, Rutus, Moolsthan, Pranavaha Strotas



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INTRODUCTION

Ayurveda compares the human body with nature *purusha* means body and *loka* means nature, *tulyatvam* means similarity. Whichever element (*yantra*) is present in nature is also present in human body and vice versa. This principle is also called as '*Pinda bramhand nyaya*'.¹ Hence, any change in mother nature also brings about changes in our body and as they are seasonal and occur in all healthy individuals they can be called as 'Physiological' and all these things are dependent on time or *kaal*.

Kaal (time) is powerful, self-emerged and without any beginning, middle and end. *Rutu* means the movement of time as a seasonal change. The hu(light)-man(individual mind) is considered to be a miniature universe. Seasonal cycles relate to the earth axis and are governed by the laws of cosmic *prana* and *apana* (involution and evolution), respectively.

Time brings changes in the *gunas* or primordial qualities and in the *doshas* or pshyco-biological humors. Seasonal changes influence all living organs. The *rutus* affect the *doshas* either by increasing the natural *gunas* of *dosha* or by decreasing them. As a result of this increase or decrease in the *guna* of *doshas* various diseases occurred.

Due to *sheet aadra* atmosphere present in *varsha rutu* diseases affecting the *pranavaha strotas* mainly occurs in the body.

Pranavaha strotas is the main *strotasa* out of the 13 *strotasa* present in the human body. According to the Ayurvedic *samhitas*, the *moolsthan* of *pranavaha strotas* is *hridaya* and *mahastrotas*.² But there is direct relation between *pranavaha strotas* and respiratory system.

The three *doshas* that is *vata*, *pitta* and *kapha* present in the human body have similar functions. Like *vayu*, *surya* and *Chandra* present in the outer atmosphere or universe³. So there is change in the human body according to the changes that occurs in the outer atmosphere out of the three *doshas*, *Vayu* mainly protects supports and directs the living creature. It is directly related to the respiratory system and has effect on it⁴.

Respiratory system is continuously in working condition from birth to death and all other system are dependent on it, thus it is a very important system in our body and hence it is essential to study about the changes in the human physiology related to *pranavaha strotas*.



AIM AND OBJECTIVES

1. To study the physiological changes on the *Pranvah strotas* according to different *rutus*.
2. To evaluate changes in functions of *dosha, dhatu* and mala in *Pranvah strotas* according to different *rutus*.

MATERIALS AND METHODS

MATERIALS

Materials which were used in study were as follows-

60 healthy volunteers, irrespective of sex between 16 to 60 years were taken for study.

INCLUSIVE CRITERIA

- Volunteers having age group 16-60 years
- Volunteers of both sexes.
- While examining *pranavah strotas* the persons having normal physiological functions of *pranavah strotasa* were selected.
- Dosha, Dhatu* and *Malas* of *pranavah strotasa* were examined and confirmed that they were in normal range.

EXCLUSIVE CRITERIA

- Volunteers having less than 16 years as they were in *balya avastha*.
- Volunteers having more than 60 years as they were in *vrudhha avastha*.
- Volunteers having habits of tobacco chewing, smoking and alcoholic were avoided.

- Volunteers having diseases of *Pranavaha strotas* e.g. *shwasakasa, pratishyay*.

INSTRUMENTS

1. Thermometer
2. Weighing machine
3. Stopwatch Spirometer 31 [for FEV, FEV₁, PEF, SVC, MVV]
4. BP apparatus
5. Sthethoscope
6. Measuring Tape
7. Breeze suite
8. Haemoglobin meter/Blood analyser

All volunteers were examined by Ayurveda and modern parameters in every *rutu*. Case report forms were filled from observations obtained in specific *rutus*.

Pulmonary Function test [PFT] were recorded by Breeze suite 3-1 a computerised spirometer. The parameters of PFT included in the study were FVC [Forced Vital Capacity], FEV [Forced expiratory volume in one second], PEF [Peak expiratory flow rate], SVC [Slow vital capacity], MVV [maximum volume ventilation] recording were done in every *rutu*.

PRANAVAHA STROTASA PARIKSHAN

Following points were taken in consideration for the examination of *pranavaha strotas*-



1. Name, age, sex, weight, height for the general examination of volunteers.
2. Volunteers were examined for their *prakruti, sara* and *bala*.
3. For general examination of *pranavaha strotasa* Inspection, Palpation, Percussion and auscultation were used.
4. During *parinaman* of *aahara*, the *kledak kapha, pachak pitta, pranvayu* generated in *mahastrotas* are *poshaka* of remaining four type of each *dosha*. If *poshak dosha* are normal then *poshya dosha* will also be normal that is why their examination is necessary⁵.
5. All *dhatwagnis* are dependent on *jatharagni* therefore examination of *mahastrotasa* is important⁵.
6. There is need for examination of formation of *Prakrut ras dhatu* from *aahar ras* because this *ras dhatu* after entering in the heart is circulated to whole body and nourish⁶.
7. Also the examination of process of *rakta dhatu nirmana* from *ras dhatu* because *rakta dhatu* nourishes the whole body. Therefore there is need for examination of *prakrut ras dhatwagni* and *prakkrut rakta dhatu*.

METHOD OF EXAMINATION

According to *Ashtang Hridaya*, *rogi* would be examined by three methods *Darshana, Sparshana* and *Prashna*.

General examination- Weight, *Sanhanan, satva, Abhyavaharan Shakti, Jaran Shakti, Vyayam Shakti, Agni, Koshtha*.

Examination of *dosha, Dhatu, Mala* regarding *Pranavaha strotas*:

A).*Dosha*

Vaat Dosha

- ***Prana vaayu-*** First volunteer was asked to sit and with the help of stopwatch respiration rate/minute was measured.

- Shwas Nighrahan Kaal:*** First volunteer was required to inhale and hold the breath after inhalation and with the help of stopwatch *shwas nighrahan kaal* was measured.

- Hridaya dharana:*** With the help of stethoscope volunteers heart rate per minute was measured in sitting position.

- ***Udaan Vayu***

- Bala;*** It was examined by *vyayam shakti*.

- Numerical test:** First volunteer was requested too inhale and while exhaling he/she was asked to count the numbers 1,2,3... as the counting starts time was measured with the help of stopwatch.

- ***Saman vaayu:***



-Anna grahana parikshan: It was decided by *aahar matra* and *aahar matra* was decided by *Abhhyavaharan Shakti*.

-Pachana Parikshan

-Saarkitta Parikshan—

a. *Mal Parikshan*

b. *Mutra Parikshan*

- **VyanVaayu:**

-*Hrid dhvani sankkhya*

-*Rakta chap parikshan*

-*Swedstravanparikshan*

- **Apan Vaayu:**

PITTA DOSHA

- **Pachak Pitta**

-*Digestion*

-*Sara kitta separation*

-*Sharir ushma*

KAPHA DOSHA

- **Avlambak Kapha-** Papatation(dull and resonant sounds) and auscultation method were done to find any changes in TVF, rhonchi, etc.

B) DHATU

- **Rasa Dhatu:**

Following changes on *Pranavaha strotasa* were found in different *rutus-*

-Nadi Parikshan

-Vikshep Bala

-Preenana Parikshan

- **RaktuDhatu**

-Jivan Karma parikshan

- **Mansa Dhatu**

-Sharir bhar(weight)

-Bala

C) MALA

1. *Purish Mala Parikshan*

2. *Mutra Parikshan*

3. *Sweda Parikshan*

SPECIAL EXAMINATIONS

- **UarahaParikshan** → *Darshan*
→ *Shravan*
→ *UarahaParigraha*

- **Pranavaha strotas Parikshan**

-PFT [Pulmonary Function Test]

-FVC [Forced Vital Capacity]

-FEV₁ [Forced expiratory volume in one second]

-PEFR [Peak expiratory flow rate]

-SVC [Slow vital capacity]

-MVV [Maximum volume ventilation]⁷

Table 1 Physiological changes in FVC according to different *rutus*

Sr.No	FVC	<i>Shishir</i>	<i>Vasanta</i>	<i>Grishmma</i>	<i>Varsha</i>	<i>Sharada</i>	<i>Hemant</i>
1	Mean	3.26	3.15	3.01	3.05	3.14	3.24
2	S.D.	0.79	0.81	0.82	0.83	0.82	0.81

**Table 2** Physiological changes in FEV₁ according to different *rutus*

Sr.No	FEV ₁	<i>Shishir</i>	<i>Vasanta</i>	<i>Grishmma</i>	<i>Varsha</i>	<i>Sharada</i>	<i>Hemant</i>
1	Mean	2.86	2.75	2.61	2.65	2.74	2.84
2	S.D.	0.71	0.72	0.73	0.73	0.73	0.72

Table 3 Physiological changes in PEFr according to different *rutus*

Sr.No	PEFR	<i>Shishir</i>	<i>Vasanta</i>	<i>Grishmma</i>	<i>Varsha</i>	<i>Sharada</i>	<i>Hemant</i>
1	Mean	316.677	313.218	308.904	310.704	313.152	316.798
2	S.D.	133.73	133.46	133.86	133.96	133.70	133.86

Table 4 Physiological changes in SVC according to different *rutus*

Sr.No	SVC	<i>Shishir</i>	<i>Vasanta</i>	<i>Grishmma</i>	<i>Varsha</i>	<i>Sharada</i>	<i>Hemant</i>
1	Mean	3.6294	3.5203	3.3741	3.4059	3.52	3.61
2	S.D.	1.2462	1.2192	1.1793	1.1812	1.2333	1.2583

Table 5 Physiological changes in MVV according to different *rutus*

Sr.No	MVV	<i>Shishir</i>	<i>Vasanta</i>	<i>Grishmma</i>	<i>Varsha</i>	<i>Sharada</i>	<i>Hemant</i>
1	Mean	3.6294	3.5203	3.3741	3.4059	3.52	3.61
2	S.D.	1.2462	1.2192	1.1793	1.1812	1.2333	1.2583

Table 6 Comparison of Other Tests Related to Respiratory System

Parameter	Diff.in <i>Uraha Parighra</i>	<i>Shwas Nighrahan Kala</i>	Numerical test	Fatigue index	Hb%
<i>Rutus</i>	Mean +-SD	Mean +-SD	Mean +-SD	Mean +-SD	Mean +-SD
1. <i>Shishir</i>	3.731+- 0.837	38.35+-9.944	35.12+-11.42	84.233+-6.01	30.506+-1.15
2. <i>Vasanta</i>	3.059+-0.779	35+-10.093	31.66+-11.38	82.393+-5.81	13.038+-1.18
3. <i>Grishma</i>	2.405+-0.77	31.79+-10.16	28.58+-11.41	80.004+-5.69	12.743+-1.20
4. <i>Varsha</i>	2.545+-0.752	31.74+-10.13	28.58+-11.22	80.47+-5.668	12.788+-1.86
5. <i>Sharad</i>	3.155+-0.796	34.92+-9.995	31.89+-11.36	82.743+-5.73	13.11+-1.145
6. <i>Hemant</i>	3.786+-0.794	38.19+-10.15	35.29+-11.41	84.24+-5.974	13.577+-1.10

The above study shows that there physiological changes are seen on *pranavaha strotasa* according to different *rutus*.

CONCLUSION

Following conclusions were found in *Dosha, Dhatu, Mala* and organs of *Pranavaha strotas* according to different *rutus*.

1). *Abhyavaharan Shakti, Jaran Shakti* depends on *Jatharagni*. All these parameters have higher values in *Shishira* and *hemanta*, middle values in *Vasant* and *Sharada* and lower values in *Grishma* and *Varsha*. It

indicates that *Agni* and *Pachan* also change according to different *rutus*.

2). The mean and std. deviation values of *Shwas nighrahan kala* also varies according to different *rutus*.

3). The mean and std. deviation values of numerical test are also higher in *Hemant* and *Shishir*, middle in *Vasant* and *Sharada* and lower in *Grishma* and *Varsha*.

4). *Preenan*-main function of *rasdhatu*; is *uttam* in *Shishir* and *hemant rutu*; *madhyam* in *sharad* and *vasant* and in *grishma* and *varsha* it is *hina*.



5). *Vyayam Shakti* also changes according to different *rutus*.

6). Micturation -Function of *apan vayu* also changes according to different *rutus* and is maximum in *Shishir* and *hemant*, average in *vasant* and *sharad* and *hina* in *grishma* and *varsha*.

7). Value of Hb% i.e. function of *rakta dhatu* also varies according to different *rutus*.

8). All pulmonary function tests such as FVC, FEV₁, PEF, SVC and MVV, their mean and std. deviations also varies with different *rutus* and are maximum in *Shishir* and *hemant*, average in *vasant* and *sharad* and *hina* in *grishma* and *varsha*.

Thus, it can be concluded that definitely physiological changes are seen on *pranavaha strotas* in different *rutus*.



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