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 psychobiological 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 moolsthlan of pranavahstrotas is hridya and mahastrotas. But there is direct relation between pranavahstrotas 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 Nyay, Doshas, Rutus, Moolsthlan, Pranavaha Strotas
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.’ Hence, any change in 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 apna (involution and evolution), respectively.

Time brings changes in the gunas or primordial qualities and in the doshas or psychobiological 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.

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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.

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 pranvaha 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 vruddha 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, PEFR, SVC, MVV]
4. BP apparatus
5. Stethoscope
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], PEFR[Peak expiratory flow rate], SVC[Slow vital capacity], MVV[maximum volume ventilation] recording were done in every rutus.

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 necessary.
5. All dhatwagnis are dependent on jatharagni therefore examination of mahastrotasa is important.
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 nourish.
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 to 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 Abhyavaharan Shakti.

-Pachana Parikshan

-Saarkitta Parikshan—
  a. Mal Parikshan
  b. Mutra Parikshan

  - VyanVaayu:
    -Hrid dhwani sankkhya
    -Rakta chap parikshan
    -Swedstravanparikshan

  - Apan Vaayu:

PITTA DOSHA

  - Pachak Pitta
    -Digestion
    -Sara kitta separation
    -Sharir ushma

KAPHA DOSHA

  - Avlambak Kapha- Papation(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 strotas were found in different rutus:

Table 1 Physiological changes in FVC according to different rutus

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>FVC</th>
<th>Shishir</th>
<th>Vasanta</th>
<th>Grishmma</th>
<th>Varsha</th>
<th>Sharada</th>
<th>Hemant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mean</td>
<td>3.26</td>
<td>3.15</td>
<td>3.01</td>
<td>3.05</td>
<td>3.14</td>
<td>3.24</td>
</tr>
<tr>
<td>2</td>
<td>S.D.</td>
<td>0.79</td>
<td>0.81</td>
<td>0.82</td>
<td>0.83</td>
<td>0.82</td>
<td>0.81</td>
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</table>
Table 2 Physiological changes in FEV₁ according to different rutus

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>FEV₁</th>
<th>Shishir</th>
<th>Vasanta</th>
<th>Grishmma</th>
<th>Varsha</th>
<th>Sharada</th>
<th>Hemant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mean</td>
<td>2.86</td>
<td>2.75</td>
<td>2.61</td>
<td>2.65</td>
<td>2.74</td>
<td>2.84</td>
</tr>
<tr>
<td>2</td>
<td>S.D.</td>
<td>0.71</td>
<td>0.72</td>
<td>0.73</td>
<td>0.73</td>
<td>0.73</td>
<td>0.72</td>
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</table>

Table 3 Physiological changes in PEFR according to different rutus

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

Table 4 Physiological changes in SVC according to different rutus

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

Table 5 Physiological changes in MVV according to different rutus

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>MVV</th>
<th>Shishir</th>
<th>Vasanta</th>
<th>Grishmma</th>
<th>Varsha</th>
<th>Sharada</th>
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<td>1.2333</td>
<td>1.2583</td>
</tr>
</tbody>
</table>

Table 6 Comparison of Other Tests Related to Respiratory System

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Diff.in Urahha Parighra</th>
<th>Shwas Nighrahan Kala</th>
<th>Numerical test</th>
<th>Fatigue index</th>
<th>Hb%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rutus</td>
<td>Mean +SD</td>
<td>Mean +SD</td>
<td>Mean +SD</td>
<td>Mean +SD</td>
<td>Mean +SD</td>
</tr>
<tr>
<td>1.Shishir</td>
<td>3.731+ -0.837</td>
<td>38.35+9.944</td>
<td>35.12+11.42</td>
<td>84.233+6.01</td>
<td>30.506+1.15</td>
</tr>
<tr>
<td>2.Vasanta</td>
<td>3.059+ -0.779</td>
<td>35+10.093</td>
<td>31.66+11.38</td>
<td>82.393+5.81</td>
<td>13.038+1.18</td>
</tr>
<tr>
<td>3.Grishma</td>
<td>2.405+ -0.77</td>
<td>31.79+10.16</td>
<td>28.58+11.41</td>
<td>80.004+5.69</td>
<td>12.743+1.20</td>
</tr>
<tr>
<td>4.Varsha</td>
<td>2.545+ -0.752</td>
<td>31.74+10.13</td>
<td>28.58+11.22</td>
<td>80.47+5.668</td>
<td>12.788+1.86</td>
</tr>
<tr>
<td>5.Sharad</td>
<td>3.155+ -0.796</td>
<td>34.92+9.995</td>
<td>31.89+11.36</td>
<td>82.743+5.73</td>
<td>13.11+1.145</td>
</tr>
<tr>
<td>6.Hemant</td>
<td>3.786+ -0.794</td>
<td>38.19+10.15</td>
<td>35.29+11.41</td>
<td>84.24+5.974</td>
<td>13.57+1.10</td>
</tr>
</tbody>
</table>

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 Grisma and Varsha.

4). Preenan-main function of rasdhatu; is uttam in Shishir and hemant rutu; madhyam in sharad and vasant and in grisha 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, PEFR, 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.
REFERENCES


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