AN OBSERVATIONAL STUDY TO ASSESS THE STATUS OF OJUS IN SUBCLINICAL HYPOTHYROIDISM

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ABSTRACT
Subclinical Hypothyroidism is a common endocrine disorder resulting from deficiency of thyroid hormone. As per WHO, over 10 million people in the world are affected by thyroid related disorders. Female gender and old age were found to have significant association with hypothyroidism. It is characterized by a broad clinical spectrum ranging from organ effects to multisystem failure. In hypothyroidism, slowing down of metabolism can be related to impairment of agni, so the proper dhathu parinama will not occur as a result there will be impairment of ojus also. As per Ayurveda, ojus is the essence of all the seven dhathus and is said to be the sareera rasa sneha where prana exits. It is the inevitable factor which maintains the homeostasis of the human body. Its normalcy is very essential for the proper physiological functioning and its derangement will result in various diseases. This study aims to observe the status of ojus in subclinical hypothyroid individuals using a validated questionnaire developed in Dept. of Kriya sareera as a part of MD dissertation work. Scoring of ojus was done as per questionnaire and descriptive statistics was used to analyze the data collected. After discussion, the study was concluded. It was seen that patients having hypothyroidism were having Madhyama and avara ojus.

Keywords: ojus, subclinical hypothyroidism

INTRODUCTION
According to Ayurveda, Ojus is the essence of all seven dhathus. Ojus is responsible for maintaining the homeostasis. Although the major seat of ojus is hridaya, it is present all over the body. Ojus is said to be the essence of all dhathus, it belongs to the prasada baga of all dhathus. Just like honeybees collect nectar from different flowers, ojus is formed as a result of the collection of snehamsa from prasada paka of all dhathus. The word ojus is derived from two words. ‘ubj’ and ‘asun’. ‘Ubj’ means arjava which means sahaja and it is derived from ‘urja’ dhathu which means to give power and vitality. Ojus could also mean ‘ubja bale’ which means sahaja or prakrutha bala. Synonyms of ojus include kapha, bala, sarva dhathu tejas etc. Ojus is of two types; Para ojus and aparar ojus. Apara ojus is also known as slaishmika ojus with
predominance of Ap and Prithvi mahabhuthas\(^3\). Quantity of apara ojus is half anjali. The para ojus which is sreshtha enters the hridaya of zygote at the time of fertilization and its quantity is eight bindu. It has a predominant white color with a yellowish and reddish tinge. Any diminution in the quantity of para ojus leads to instantaneous death.

According to Charaka samhitha, ojus have the color of ghee, taste of honey and smell of laja\(^4\). Charaka while describing madataya chikitsa has given ten qualities to ojus stating that they are opposite to that of visha

**Different Concepts of Ojus**

The word ojus has been used with different meanings in different contexts in the literature of Ayurveda. Charaka has used ojus for both prakrutha kapha and for bala\(^5\). Ashtanga Sangrahya describes rasatmaka ojus as a type of ojus and according to him, dasa moola siras which spreads whole over the body carries rasaroopi ojus throughout the body. In this context Arunadatta commented that the rasa swabhavi ojus that is formed after the separation of ahararasa from kittha.

Acharya Delhana in Nibandha samgraha commentary explains that ojus is jeeva sonita. Hemadri also supports the opinion of ojus as rasa, jeevsonita and prakrutha kapha. According to Vaghbatha, Hemadri and Delhana, ojus is the sara of sukra. Delhana and Bhavamisra opine that sukra is ojoposhana and according to Chakrapani, sukra is ojojanana. Kasyapa has included ojus as the sara and According to Sargdhara, ojus is considered as the upadhathu of sukra dhathu. But according to Ashtanga hridaya, ojus is considered as the mala of sukradhathu.

Since the quantity of para ojus is fixed, any alteration in the quantity of ojus does not influence para ojus. Depreciation of ojus is of three types; oso visramsa, ojo vyapath and ojo kshaya. Ojus undergoes kshaya by anger, worry, grief, exertion etc. and by kshaya the person becomes fretful, debilitated, worries much again and again, feels discomfort in the sense organs and develops bad complexion, poor mentation and dryness\(^6\).

Hypothyroidism is a hypo metabolic clinical state resulting from inadequate production of thyroid hormones for prolonged periods or rarely from resistance of the peripheral tissues to the effects of thyroid hormones\(^7\).

The worldwide prevalence of primary hypothyroidism is 1:100 but increases to 5:100 if patients with subclinical hypothyroidism are included. The female male ratio is approximately 6:1\(^8\). The various causes of primary hypothyroidism are spontaneous atrophic hypothyroidism, thyroid failure following surgical treatment and hashimoto’s thyroiditis.

Subclinical hypothyroidism also known as compensated hypothyroidism is a condition associated with a raised serum concentration of TSH but a normal serum free thyroxine (T\(_4\)). It is common, affecting about 10% of women above the age of 55 years. Autoimmunity is the commonest cause of subclinical hypothyroidism. Patients with subclinical hypothyroidism progress to overt hypothyroidism, the rate of progression is higher in patients with thyroid autoantibodies and higher TSH levels. Only a small minority of patients with subclinical hypothyroidism have symptoms. Autoimmunity is the commonest cause of subclinical hypothyroidism. Patients with subclinical hypothyroidism progress to overt hypothyroidism. The risk increases with increasing levels of TSH.

In Ayurvedic view, hypothyroidism can be taken as a santharpana janya vikara with kapha pradhana tridosha dushti. According to Ayurveda, agni is the chief factor which is directly related with all basic pathogenesis. There is a close resemblance between the functions of thyroid hormone and function of agni.

**Background and Rationale**

The overall prevalence rate of thyroid function abnormalities in Kerala was found to be 15.7% more in females (16.9%) than in males (13.9%). The subclinical hypothyroidism was commonest thyroid abnormality (7.15) followed by overt hypothyroidism (4.2%). Patients with untreated hypothyroidism had worse quality of life, predominantly fatigue, compared to healthy patients without hypothyroidism.

As per Ayurveda, ojus is the essence of all the seven dhathus and is said to be the sareera rasa sneha where prana exits. Hypothyroidism is characterized with agnimandya at koshta and dhathu levels. In hypothyroidism, slowing down of metabolism can be related to...
impairment of agni. So the proper dhathu parinama does not occur as a result there is impairment of ojus also. Ojus is the inevitable factor which maintains the homeostasis of the human body. Its normalcy is very essential for the proper physiological functioning and its derangement results in various diseases.

There were no previous studies done to see the relation between ojus and hypothyroidism, as in hypothyroidism ojus is very much affected.

Methodology

- Type of study - Observational study.
- Study setting - GAVC, Kannur
- Study population - subclinical Hypothyroid subjects who were under medication
- Sample size - 15
- Sampling technique - Consecutive sampling

Inclusion Criteria

- Individuals of age group between 15-60 years,
- diagnosed cases of subclinical hypothyroidism who were under treatment

Exclusion Criteria

- Pregnant and lactating women
- subjects with mental illness,
- subjects taking medicine for other systemic illness
- alcohol and tobacco addicts

Materials and Methods

1. Research proforma
2. Ojus assessment tool

Research proforma contains questions regarding demographic data and self-prepared symptom rating scale for hypothyroidism. Symptoms like generalized weakness, weight gain, cold intolerance etc. were assessed.

Status of ojus is assessed by a validated questionnaire developed by Dept. of Kriya Sareera, GAVC, Kannur as a part of MD dissertation work. It contains 37 questions based on physical, intellectual and attitude.

The collected data was tabulated using SPSS 16.0, and analyzed using appropriate statistical tests. Demographic data and other relevant information were analyzed with descriptive statistics. Relationship between score of ojus and TSH value and relationship between score of ojus and symptoms of hypothyroidism and were analyzed using Spearman correlation coefficient formula. Relationship with chronicity of hypothyroidism and score of ojus was analyzed using Kruskal-wallis statistical test.

The changes (one tailed) with p value <0.05 will be considered as statistically significant.

Observation And Analysis

The subjects who presented at Kriya sareera OPD of GAVC, Kannur were screened with diagnostic criteria and those who fulfilled the inclusion criteria were registered for the study.

Demographic data: out of 15, subjects 10 were in the age group of 30-45 years which marked the highest. 14 were female subjects and 10 from rural areas.

Out of 15 subjects 66.7% belongs to subclinical hypothyroidism grade 1 category. Generalized weakness is present in 60% subjects and occasionally present in 40% subjects. Constipation is occasionally present and cold intolerance is present in 66.7% subjects. Increased hair falls and poor mentation is present in 60% subjects.

Graph 1: Distribution according to Weight gain
Graph 2: Distribution according to Status of ojus

Table 1: Distribution according to constipation

<table>
<thead>
<tr>
<th>Sl no</th>
<th>Constipation</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Present</td>
<td>13.3</td>
</tr>
<tr>
<td>2</td>
<td>Occasionally present</td>
<td>66.7</td>
</tr>
<tr>
<td>3</td>
<td>Absent</td>
<td>20.0</td>
</tr>
</tbody>
</table>

Table 2: Distribution according to cold intolerance

<table>
<thead>
<tr>
<th>Sl no</th>
<th>Cold intolerance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Present</td>
<td>66.7</td>
</tr>
<tr>
<td>2</td>
<td>Occasionally present</td>
<td>20.0</td>
</tr>
<tr>
<td>3</td>
<td>Absent</td>
<td>13.3</td>
</tr>
</tbody>
</table>

Table 3: Distribution according to generalized weakness

<table>
<thead>
<tr>
<th>Sl no</th>
<th>Generalized weakness</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Present</td>
<td>60.0</td>
</tr>
<tr>
<td>2</td>
<td>Occasionally present</td>
<td>40.0</td>
</tr>
<tr>
<td>3</td>
<td>Absent</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 4: Distribution according to mood changes

<table>
<thead>
<tr>
<th>Sl no</th>
<th>Mood changes</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Present</td>
<td>73.3</td>
</tr>
<tr>
<td>2</td>
<td>Occasionally present</td>
<td>20.0</td>
</tr>
<tr>
<td>3</td>
<td>Absent</td>
<td>6.7</td>
</tr>
</tbody>
</table>

Table 5: Distribution according to Poor mentation

<table>
<thead>
<tr>
<th>Sl no</th>
<th>Poor mentation</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Present</td>
<td>60.0</td>
</tr>
<tr>
<td>2</td>
<td>Occasionally present</td>
<td>13.3</td>
</tr>
<tr>
<td>3</td>
<td>Absent</td>
<td>26.7</td>
</tr>
</tbody>
</table>

Results

Significance between score of ojus and symptoms of hypothyroidism was assessed using spearman correlation coefficient and the level of significance was found to be 0.002. Significance between score of ojus and TSH value was analyzed using spearman correlation coefficient and it was found to be insignificant. Chronicity of Subclinical hypothyroidism and score of ojus was analyzed using kruskal-wallis statistical test and the result was found to be not significant.

DISCUSSION

The P value observed in the analysis is 0.002, which shows that there is a statistically significant association between subclinical hypothyroidism and status of ojus. Due to modernization and lifestyle changes, incidence of subclinical hypothyroidism is increasing. Generalized weakness, poor mentation, mood changes, dry and coarse skin, giddiness are the features of Hypothyroidism. Vyadhithendriya, durmana, rooksha sareera, durbala, kshama are the lakshanas of ojo kshaya. These ojo kshaya lakshanas can be seen in hypothyroidism also. Along with ojo kshaya lakshana, certain rasakshaya lakshanas are also seen in hypothyroidism. Weight gain was observed in 80% subjects and this may be due to dhathwagi madya. Initially the dhatu parinama process takes place normally, which further decreases at the level of mamsa and medas, forming mamsa and medas excessively resulting in weight gain.
Generalized weakness and poor mentation were present in 60% subjects. Dehasthithi nibandhana is the function of ojus that means it controls the working of the body. When there is ojokshaya, it disturbs the normal functioning of both manas and sareera. Generalized weakness and poor mentation can be due to ojo kshaya in subclinical hypothyroidism.

Ojus is said to be the sareera rasa sneha where prana exists. In ojo kshaya there is rookshatha and dry and coarse skin are present in 50% subjects with subclinical hypothyroidism and rasa kshaya lakshananas like sabdasahishnutva is present in 50% subjects.

Because of the subjects in the study group who were undergoing medication for hypothyroidism, so that the relationship between score of ojus and TSH value was found to be insignificant. Also, there is no relationship between chronicity of hypothyroidism and score of ojus. This may be due to medicine consumption for hypothyroidism and small sample size.

**CONCLUSION**

Ojus is the prasada bhaga of all dhathus and it greatly depends upon the proper functioning of agni. Agni mandya accounts for the cause of different diseases. Dhathwagni mandya was observed in subclinical hypothyroidism. Dhthwagni mandya leads to production of impaired ojus and thus features of ojo kshaya observed in subclinical hypothyroidism. Along with ojo kshaya, rasa kshaya lakshananas are also observed in subclinical hypothyroidism. Out of the 15 subjects, 14 were female and 10 belong to 30-45 years of age group.

Ojo kshaya lakshananas are seen in subjects with subclinical hypothyroidism. Ojus is responsible for normal physical and mental wellbeing of an individual and thus in ojo kshaya, lakshananas affecting both sareera and manas like vyadhitendriya, rookshatha, kshamatha, durmana, durbala are seen.

Relationship between score of ojus and symptoms of subclinical hypothyroidism are statistically significant.

**REFERENCES**

Annexure

1. Research Proforma

Preliminary data
1. Name:
2. Age: 15-30 31-45 46-60
3. Sex: male/female
4. Marital status: single/married/widow/divorced
5. Domicile: urban/rural
6. Religion: Hindu/Muslim/Christian/others
7. Occupation: office work/manual labour/housewife/others
8. Definitions of hypothyroidism:

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>TSH</th>
<th>Thyroxine levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subclinical hypothyroidism</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade-1</td>
<td>above upper limit (4-10mU/L)</td>
<td>normal</td>
</tr>
<tr>
<td>Grade-2</td>
<td>10.1-20mU/L</td>
<td>normal</td>
</tr>
<tr>
<td>Grade-3</td>
<td>&gt;20mU/L</td>
<td>normal</td>
</tr>
</tbody>
</table>

9. Duration: 0-5 years/5-10 years/10-15 years/more than 15 years
10. Treatment history:
11. Clinical presentations of thyroid cases

<table>
<thead>
<tr>
<th>No.</th>
<th>Clinical presentations</th>
<th>Present</th>
<th>Absent</th>
<th>Occa: present</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Generalized weakness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Weight gain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Mood changes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Dry skin</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>Constipation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Menorrhagia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Cold intolerance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Poor mentation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Headache</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Increased hair fall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Hoarseness of voice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Palpitations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Impaired hearing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Giddiness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Coarse skin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Pedal edema</td>
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<td></td>
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<tr>
<td>17</td>
<td>Slow movements</td>
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<td>18</td>
<td>Cold skin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Bradycardia</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

2. Questionnaire to assess the status of OJUS

1. Are you afraid to have visit to a hospital?
a) always afraid b) sometimes afraid c) never afraid
2. Do you have the feeling of fear when you are being watched by someone else?
3. Do you feel any anxiety about misfortunes that will befall on you?
   a) Always anxious  b) sometimes anxious  c) never anxious
4. Do you get tense about travelling outside alone?
   a) Always get tensed  b) sometimes get tensed  c) never get tensed
5. Do you have the feel of easy dislocation of joints?
   a) Always feel  b) sometimes feel  c) never feel
6. Do you feel weary?
   a) Always feel  b) sometimes feel  c) never feel
7. Do you feel any difficulty in moving your body?
   a) Always feel  b) sometimes feel  c) never feel
8. Do you feel heaviness in your body?
   a) Always feel  b) sometimes feel  c) never feel
9. Do you feel any change in complexion during the last six months?
   a) Always feel  b) sometimes feel  c) never feel
10. Do you feel exhausted even in the beginning of a heavy work?
    a) Always feel  b) sometimes feel  c) never feel
11. Do you always feel lazy?
    a) Always feel  b) sometimes  c) never
12. Do you feel drowsy while doing things?
    a) Always feel  b) sometimes feel  c) never feel
13. Do you often yawn?
    a) Always yawn  b) sometimes yawn  c) never yawn
14. Do you feel sleepy even after having a sound sleep?
    a) Always feel  b) sometimes feel  c) never feel
15. Have you been losing consciousness frequently during the last six months?
    a) Always lose  b) sometimes lose  c) never lose
16. Do you feel that your body is getting slim during the last six months?
    a) Always feel  b) sometimes feel  c) never feel
17. Are you not able to enjoy even joyful moments?
    a) Always able to enjoy  b) sometimes able to enjoy  c) never able to enjoy
18. Do you feel that your body is dry?
    a) Always feel  b) sometimes feel  c) never feel
19. Do you feel that your lips are always dry?
    a) Always feel  b) sometimes feel  c) never feel
20. Do you feel thirsty even after drinking enough water?
    a) Always feel  b) sometimes feel  c) never feel
21. Do your nails break easily?
    a) Always break easily  b) sometimes break easily  c) never break easily
22. Do you have hair loss?
    a) Always have  b) sometimes have  c) never have
23. Do you have constipation?
    a) Always have  b) sometimes have  c) never have
24. Does your body have inflammation that appears and disappears abruptly?
a) Always have  b) sometimes have  c) never have
25. Do you feel you don’t have the required firmness in your body?

a) Always have  b) sometimes have  c) never have
26. Do you feel difficulty in doing daily chores?

a) Always feel  b) sometimes feel  c) never feel
27. Can you bend down and straighten up with ease?

a) Always bend  b) sometimes bend  c) never bend
28. Do you feel any difficulty in lifting even one kilogram weight?

a) Always feel  b) sometimes feel  c) never feel
29. Do you feel any difficulty while getting up from an armless chair?

a) Always have  b) sometimes have  c) never have
30. Do you feel any difficulty in getting up from bed?

a) Always have  b) sometimes have  c) never have
31. During the last six months have you felt you have reduced your voice while talking?

a) Always feel  b) sometimes feel  c) never feel
32. In the past six months have you felt any strain in talking?

a) Always feel  b) sometimes feel  c) never feel
33. Is your daily routine disturbed due to lack of memory?

a) Always disturbed  b) sometimes disturbed  c) never disturbed
34. Do you find any difficulty in taking decisions regarding day today matters?

a) Always feel difficulty  b) sometimes feel difficulty  c) never feel difficulty
35. Do you find situations in which you don’t remember the tasks to be done one after another?

a) Always find  b) sometimes find  c) never find
36. Are you able to pray with concentration?

a) Always able to  b) sometimes able to  c) never able to
37. Are you able to do things with concentration?

a) Always able to  b) sometimes able to  c) never able to

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Conflict of Interest: None Declared