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Assessment of Rasa Dushti Lakshanas among Hypothyroidism Patients - A Research Article

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Abstract: ***Background: The altered life style that might be dietary alterations or life style variations are prime cause for the manifestation of the disease. Understanding the diagnosis of this disease in Ayurveda is very essential. Hence the involvement of Rasa Dhatu, its Dusti in disease process is studied and expressed through this study. Method: This cross-sectional hospital-based study was conducted among hundred consecutive previously diagnosed patients with Hypothyroidism attending JSS Ayurveda Hospital from January to December 2019. After obtaining written informed consent, the data on demographic details, duration of Hypothyroidism, prognosis of disease, and Rasa Dushti Lakshanas were collected in a pretested structured questionnaire by interview technique. Results: Among the hundred patients with Hypothyroidism included in the present study, majority belonging to 41–50 years' (33%) age group and majority 84 (84%) were females and 16 (16%) were males. It was observed that, as the Rasa Dusti Nidana scores increase, there was also increase in the Rasa Dusti Lakshanas among patients with Hypothyroidism. This correlation was found to be strong and statistically significant (r = 0.546 p <0.001*). Conclusion: The present study has revealed that Rasa Dusti Nidana was seen evidently in the manifestation of Hypothyroidism.***

Keywords: *Nidana*, Hypothyroidism, *Rasa Dusti*

1. Introduction

Thyroid gland is one of the important glands of the endocrine system. Principal function of thyroid gland is to act as a 'catalyst' for the maintenance of oxidative metabolism[1]. Thyroid gland disorders are growing worldwide health issue. It is estimated that, about 42 million people suffer from thyroid disorders in India. Amongst which Hypothyroidism is one of the most common endocrine disorders observed all over the world1. It occurs about 7-8 times more frequently in females than males[2].

The Thyroid gland produces two related hormones Thyroxin [T4] and Triiodothyronine [T3]. These hormones play a critical role in cell differentiation during development and help maintain thermogenic and metabolic homeostasis in the body. Thyroid gland produces thyroid hormones which regulate metabolic rate of the body. Deficiency of these hormones is known as Hypothyroidism. 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[3]. The prevalence of Hypothyroidism in India is 11%, the highest prevalence of Hypothyroidism is about 13.1% in people aged 46-54 years and 7.5% in people aged 18 – 35 years[4].

There is no direct mention of thyroid disorders in *Ayurveda*. Proper Ayurvedic management needs the proper understanding of pathogenesis of hypothyroidism as per the principles of *Ayurveda*.

Ayurveda has endowed the function of thermogenesis and metabolism in the body to *Agni.* It is defined as substance or entity that brings about transformation / conversion in any form. The thirteen types of *Agni* bring about all the chemical reactions and transformations in the body. *Samagni* is one of the most important criteria of *Swastha Purusha*. *Agnimandya* is one of the commonest disorders of *Agni*. *Agnimandya* leads to formation of *Ama* – noxious form of *Rasa Dhatu* that causes various diseases[5]. The normal and abnormal functions of Thyroid gland and *Agni* are similar[6].

On reviewing the *Samprapthighatakas* involved in the pathogenesis of Hypothyroidism it is found that there is *Kapha* and *Vata Dosha Dushti*, *Jatharagni* & *Dhatwagni Dushti* and *Rasa Dushti*. The prevalence of *Rasa Dushti* is said to be more predominant in this disease[7]. So an attempt was made to evaluate *Rasa Dushti* in Hypothyroidism. Hence disease process is studied and expressed through this study.

2. Methods

This cross-sectional, single-center, hospital-based study was conducted by collecting data from study participants from January to December 2018. Approval from the Institutional Human Ethics Committee was obtained before the start of the study.

Hundred patients diagnosed with Hypothyroidism were selected for the study. A structured pro forma was prepared for the collection of data on details of history and general and systemic physical examination of patients. Socioeconomic status was calculated by B.G. Prasad Classification modified based on AICPI for January 2018. Body mass index classification done according to Asia Pacific classification and questionnaire to know the *Rasa Dusti Nidana* and its *Lakshanas* prepared based on literature search was administered for the assessment of *Rasa*.

Inclusion criteria

1) Patient of either gender between age group of 16-60 years are taken for the study.

2) Clinically diagnosed patients confirmed by high TSH with or without associated decrease in T3&T4 concentration. 3. Newly detected cases of Primary Hypothyroidism.
3) Patients who have already diagnosed as Hypothyroidism & on regular medications present with Diagnostic criteria will be included.
4) Patients' consenting to participate in this study was taken.

Exclusion criteria

1) Patients suffering from other systemic diseases like Diabetes mellitus and hereditary disorder cretinism will be excluded.

Diagnostic criteria

Diagnosed case of Hypothyroidism was taken for the study.

1) TSH High, T3 T4 Normal
2) TSH High, T3 T4 Low

3. Results

Among the hundred subjects included in the study, majority of the nidanas were prevalent. Based on prevalence, major nidanas were Atimatra in 27 % followed by Atisnigdha in 44 %, Madhura ahara in 96%, Samashana in 40%, Guru ahara in 65% of the subjects.

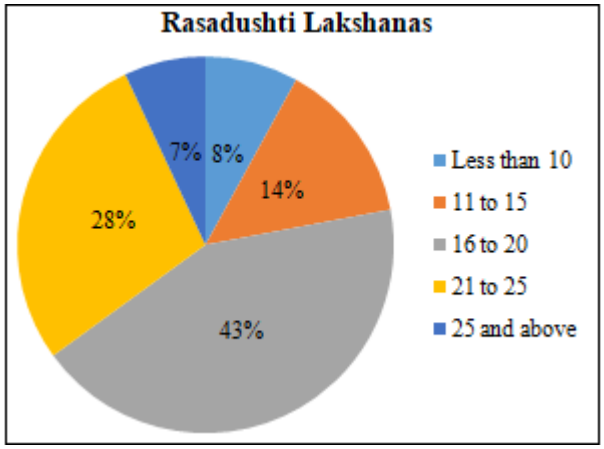
Table 1: Distribution of study subjects based On Presence and Absence of Rasa Dushti Lakshanas

S. No	*Lakshanas of Rasa Dushti*	*Absent*	*Present*
1	Baldness/ Hair fall	5 (5%)	95 (95%)
2	Greying of hair /	11 (11%)	89 (89%)
3	Drowsy	12 (12%)	88 (88%)
4	Bodyache/Mailaise	19 (19%)	81 (81%)
5	Feverish	54 (54%)	46 (46%)
6	Flexibility of body	45 (45%)	55 (55%)
7	Reduced appetite	12 (12%)	88 (88%)
8	Indigestion	23 (23%)	77 (77%)
9	Nausea	64 (64%)	36 (36%)
10	Increased salivation	56 (56%)	44 (44%)
11	Laziness	30 (30%)	70 (70%)
12	Coldness of Extremities	56 (56%)	44 (44%)
13	Looseness of body parts	48 (48%)	52 (52%)
14	Breathlessness/ dyspnoea	40 (40%)	60 (60%)
15	Cough	65 (65%)	35 (35%)
16	Excessive sleep	30 (30%)	70 (70%)
17	Loneliness	31 (31%)	69 (69%)
18	Excessive thirst	41 (41%)	59 (59%)
19	Impaired heart rate	24 (24%)	76 (76%)
20	Reduced body movement	36 (36%)	64 (64%)
21	Dryness of the body	8 (8%)	92 (92%)
22	Getting tired for little work	19 (19%)	81 (81%)
23	Sound intolerance	17 (17%)	83 (83%)
24	Heaviness of the body	23 (23%)	77 (77%)
25	Bad smell from mouth	74 (74%)	26 (26%)
26	Stress	46 (46%)	54 (54%)
27	Loss of interest	44 (44%)	56 (56%)
28	Whitish discolouration	79 (79%)	21 (21%)
29	Tastelessness	91 (91%)	9 (9%)

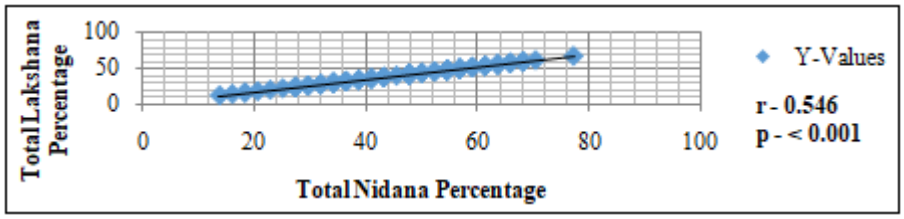
Table 2: Distribution of Subjects based on the presence of total number of Rasadushti Lakshanas (Range)

Total No of Rasadushti Lakshanas (Range)	*No of subjects*	*Percentage*
less than 10	8	8.0%
11 to 15	14	14.0%
16 to 20	43	43.0%
21 to 25	28	28.0%
25 to 30	7	7.0%
Total	100	100.0%

Table 1 – Represents the distribution of subjects based on presence and absence of Rasadushti lakshnas in the study subjects. Table 2 represents the number of lakshanas present in the subjects. Among 100 subjects included in the study, Majority 43 (43%) of the subjects had *Lakshanas* between 16-20, 28 (28%) of the subjects had *Lakshanas* between 21-25, 14 (14%) of the subjects had *Lakshanas* between 11-15, 8 (8%) of the subjects had *Lakshanas* less than 10, 7 (7%) of the subjects had *Lakshanas* more than 25.

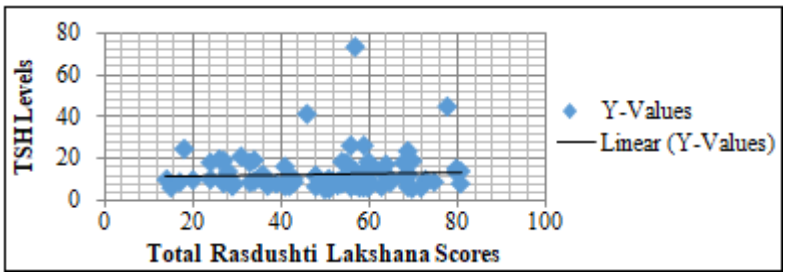


Graph 1: Distribution of study subjects based On Rasadushti Lakshanas (Range)



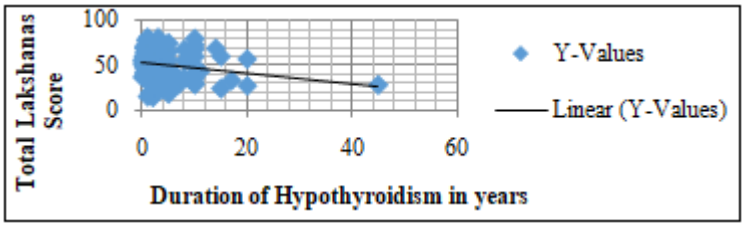
Graph 2: Scattered plot showing Correlation between *Nidana* (etiology) and *Lakshana* Scores in the patient of Hypothyroidism

Spearman Rank co-relation test was performed between *Rasadushti Nidana* and *Rasadushti Lakshanas* and it was noted that p - <0.001 value being highly positive significant. Coorelation between *Rasadushti Nidana* and *Rasadushti Lakshanas* r – 0.546 which signifies that with the increase in *Rasadushti Nidana* scores there is increase in *Rasadushti Lakshana* scores value. This correlation was said to be statistically highly significant.



Graph 3: Scattered plot showing correlation between TSH Values and *Rasadushti Lakshanas* in the patient of Hypothyroidism

Spearman Rank co-relation test was performed between TSH value and *Rasadushti Lakshana* and it was noted that p - value being statistically significant. Correlation between *Rasadushti Lakshanas* and TSH value r 0.041 which signifies that this correlation was said to be statistically significant.



Graph 4: Scattered plot showing Correlation between Duration of Hypothyroidism (Years) and *Rasadushti Lakshanas* in the patient of Hypothyroidism

Spearman Rank co-relation test was performed between *Rasadushti lakshana* and duration of Hypothyroidism it was noted that p <0.022 value being statistically significant. Coorelation between *Rasadushti lakshanas* and duration of hypothyroidism r – 0.0229 which signifies that this correlation was said to be statistically significant.

4. Discussion

Discussion on *Nidanas* of *Rasa Dusti*

In this present study, there was more prevelance of *Atiguru Ahara* like *Pishta Ahara* etc and Fast food consumption was more which comes under *Atiguru, Atisnigda Ahara*. Subjects had habit of consuming food repeatedly that is *Adhyashana.*

All these *Nidanas* results in *Agni Mandya* by two ways:-
1. *Ahara Sevana Vidhi Tyaga*2.*Dushta Bojana*

By consuming these *Nidanas Kapha Dosha* increases there by reduces the *Agni*, or due to *Ahara Sevana Vidhi Tyaga* directly leading to *Agnimandya*, leading to the *Dushti* of the foremost *Dhatu* that is *Rasa Dhatu*. *Viharaja Nidana* like *Diwaswapna* was seen 24% of subjects which causes *Tridosha Prakopa*[8] causing *Agnimandya*, leading to *Rasa Dushti*.*Manasika Nidana – Atichinta* which can be compared to stress. Stress was present in 54% of the study subjects which is a direct *Nidana* for *Rasa Dushti*. These *Nidanas* are more revelant in present era hence there is more prevelance of hypothyroidism.

Discussion on *Lakshnas* of *Rasadushti* and Hypothyroidism

The presentation of *Rasa Dushti Lakshana* was different. Out of 30 *Rasa Dushti Lakshanas*, minimum 8 *lakshanas* and maximum 27 *lakshanas* was observed in study subjects. Ranges were made and observed that, 21-25 *lakshanas* were present in 28% of the subjects, 11 – 15 *lakshanas* present in 14% of the subjects, less than 10 *lakshanas* present in 8% of the subjects, 25-30 *lakshanas* presnt in 7% of the subjects. Maximum subjects had *lakshanas* between 21 to 25.

The number of *lakshanas* doesn't define the severity of *Rasa Dushti*. Less number of *lakshanas* could be more severe. The *lakshanas* manifested depend on many factors like *Prakruthi, Desha, Kala, Vaya, Satmya. Ayathakala Khalitya* and *Palitya* is a *Lakshana* in *RasaDushti* and in Hypothyroidism. Where as these *lakshanas* are seen in *Pitta Prakruthi*[9] individuals as it's a *Swabhava*. In present study *Pitta Pradhana Prakruthi* person with *Rasa Dushti* had severe *Ayathakala Khalitya* and *Palitya*.

The severity of *Rasa Dushti Lakshanas* has to be assessed by the *Bala* of the *lakshana* and duration of its presentation. The severity of *Rasa Dushti* is dependent on severity of its presentation rather than number of *Lakshanas*

Discussion on *Doshas*

Doshas are the *Sannikrustha Nidana* in any disease. Without the vitiation of *Doshas Vyadhi* will not manifest. Hypothyroidism is also the resultant of *Dosha* variation. *Lakshanas* of Hypothyroidism was correlated with *Rasadushti lakshnas*. The corresponding *Dosha* involvement in those *Lakshanas* was analysed.

Among the study subjects, there was more predominance of *Kapha Dosha Dushti* associated with *Pitta* and *Vata Dosha Dushti*.

Two sets of *Dosha Dushti* was observed in Subjects:1) *Vatakaphaja* and 2) *Kaphavataja* along with or without *Pitta* association. *Vatakaphaja* – Predominance of *Vataja Lakshanas* like *Angamarda, Roukshyatwa, Shwasa Kasa* along with mild *Kaphaja Lakshanas* like *Gourava, Agnimandya, Atinidra* was observed. *Kaphavataja* was same as *Vatakaphaja* but presentation of *Lakshanas* were vice versa.

Hence Hypothyroidism is *Tridoshaja Vyadhi* with *Kapha Vata Dosha* predominant.

Discussion on *Dhatus*

Rasa Dhatu Dushti was present in all the subjects of Hypothyroidism. 51 (51%) had *Mamsa Dhatu Dushti* then 31 (31%) *Medo Dhatu*, 30 (30%) *Rakta Dhatu*, 20 (20%) *Asthi* and *ShukraDhatu* was observed in the present study. Long standing *Rasa Dushti* results in *UttarottaraDhatu Dushti* depending on the *Ahara Vihara* followed by them.

In the present Study, *RasaDushti* was observed in various degrees. The amount of *Dhatu Dushti* directly depends on the amount of *Nidana* taken and type of *Nidana*. Hence there was varied degrees of *Rasa Dushti* in the present study subjects.

Medo Dhatu Dushti was seen in subjects who had habituated of consuming Ghee, butter, cheese, all which increases *Medo Dhatu*. 51% of the subjects had an habit of *Diwaswapna* which was practiced immediatetely after consuming*Ahara*. This directly aftects *Medo Dhatu*. *Sthoulya* is *lakshana* of *Medo Dhatu Dushti*. 70% of the subjects were *Sthoulya* in the present study.

Shukra Dhatu is the last *Dhatu*. It takes longer time to reach *Shukra*. But if *Shukrahara Ahara Vihara* are consumed than it can fasten the process and reach *Shukra Dhatu* bypassing all other *Dhatus*. To evaluate *Shukra Dushti*, Infertility was observed and In the present study, 15% of the subjects were suffering from Infertility.

Discussion on *Samprapthi* and *Samprapthi Ghataka* of Hypothyroidism

Due to the intake of *Kaphakara Ahara-Vihara*, and the *Nidana's* as mentioned above *Kapha Dosha Vruddhi* occurs predominantly along with *Vata* and *Pitta Dosha* causing *Agnimandya.* As a result there is formation of *Ama* which further impairs the quality of *Rasadi Dhatu's*. *Rasa* being the first among the *Sapta Dhatu's* gets impaired initially and thereby the successive *Dhatu's* also get depleted qualitatively and quantitatively. Therefore, a wide range of *Lakshanas* as mentioned are seen depending upon the amount of *Nidana* consumed and the progress of *Vyadhi Samprapti* having its impact till the *Shukra Dhatu* in respective patients. This infers the involvement of *Rasa* as a *Dushya* predominantly in the *Samprapti* that causes *Srotoavarodha* in *Rasavaha Srotas* and thereby *Hrudaya* and *Manas* are also affected as *Hrudaya* is *Rasavaha Srotomula* and also the *Adhistana* for *Manas*.

Samprapti Ghataka

Dosha: Kapha Pradhana Dosha, Vata Pitta Anubandha Dosha
Dushya: Rasa (Mamsa, Meda, Majja, Shukra)

Agni: Jatharagni-Mandya leading to Rasa Dhatwagni Mandya
Ama: Jatharagni Mandyajanya Ama and Dhatwagni Mandyajanya ama
Srotas: Rasavaha Srotas Srotodushti: Sanga
Udbhava Sthana: Amashaya
Sancharasthana: Rasavaha Srotas
Adhisthana: Sarvashareera
Vyaktasthana: Sarvashareera
Roga avastha: Chirakari
Rogamarga: Abhyantara

5. Discussion on Results

As per the present study the role of *Rasa Dushti* in Hypothyroidism was analysed.

1) *Rasa Dushti Nidana* and *Lakshana* are dependent on each other. Hence *Rasa Dushti Nidanas* are causative factors for Hypothyroidism.
2) *Rasa Dushti Lakshanas* were present in different ranges, from minimum 8 to maximum 27 *Lakshanas*. The severity of *Rasa Dushti* is dependent on severity of its presentation rather than number of *Lakshanas*. In the present study, based on the grading of 30 *Lakshanas* in the study subjects, 8 *Lakshanas* were predominantly seen namely, *Ayathakala khalitya, Agnimandya, Ajeerna, Tandra, Atinidra, Glani, Hrutkampa, Angamarda*.
3) *Rasa Dushti Lakshanas* and TSH values. – TSH values and *Rasa Dushti Lakshanas* are independent variable. Subjects with low TSH values might have more number of *Lakshanas* and subjects with high TSH might may have less number of *Lakshanas*, thus confirming the multifactorial nature of TSH value. The TSH values are influenced by multitude of factors such as *Prakruthi, Desha, Kala, Vaya, Satmya* apart from the severity of *Rasa DushtiLakshanas.*
4) *Rasadushti lakshana* and Duration of Hypothyroidism – both are dependent on each other. As duration of hypothyroidism increases the number of *Rasadushti lakshanas* slightly decreases. This might be because of various factors like
   - Among 100 study subjects, 91% of the subjects where under thyroxine supplement.
   - Among 100 study subjects, 74% of the subjects had history of hypothyroidism < 5 years.
   - Lifestyle changes, dietary changes. Etc

6. Conclusion

From this study, it can be validated that the *Rasa Dhatu* is one of the factors responsible to maintain the healthy internal body environment by maintaining hormonal balance and proper functioning of the same. Hence, this Hypothyroidism can be considered under one of the *Rasa Dusti Prakaras*, as there is hampering of *Tarpana, Vardhana, Dharana*, and *Preenana* which is not maintained. The consumption of *Rasa Dusti Nidana* was seen evidently in the manifestation of Hypothyroidism.

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