Case Study

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A CLINICAL CASE STUDY OF HYPERTHYROIDISM AND ITS *AYURVEDIC* MANAGEMENT

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ABSTRACT

Hyperthyroidism or thyrotoxicosis is a disorder of the thyroid gland resulting in hypersecretion of thyroid hormones, namely T_3 and T_4, that, in turn, result in the diminished secretion of thyroid-stimulating hormone. All these events lead to hyperactivation of metabolism and sympathetic nervous system, resulting in symptoms of increased body secretions, diarrhoea, palpitation, raised blood pressure, fatigue and intolerance to heat. Also, there are symptoms of increased appetite and weight loss and menstrual and erectile dysfunction. In *Ayurveda,* there is no concept of hormones. On an *Ayurveda* basis, body and disease are *dosa*, *dhatu* and *mala,* so after reviewing *Ayurveda* text, Hyperthyroidism seems to be aggravated *Pitta-Vata* disorder leading to *teekshana agni* (increased digestive fire) and *ati- mala pravritti* (frequent stools), *ati sweda* (excessive sweating), *vishrata* (smell of raw meat), *alpa sukra* (oligospermia), *alpa putra* (less progeny) etc. A 25-year-old female, already diagnosed with Hyperthyroidism, came to OPD of *Kayachikitsa* CBPACS. On evaluation, it seems that the patient has symptoms of aggregated *Pitta Vata*; with *Ayurvedic* medicine, the patient is completely cured and values of TSH raised from 0.030 µIU/ml to TSH- 4.01 µIU/ml within normal limits.

Keywords: Hyperthyroidism, TSH, Metabolism, Sympathetic Nerves System.

INTRODUCTION

Thyrotoxicosis or Hyperthyroidism is a metabolic disorder in which metabolism is hyperactivated and is associated with raised levels of free thyroxine (FT_4) and free tri-iodothyronine (FT_3). Grave's disease, toxic multinodular goitre, toxic adenomas, iodide-induced Hyperthyroidism, trophoblastic tumours, and elevated TSH secretion from thyrotrophinoma are some of the causes of Hyperthyroidism[1]. Increased metabolic activity and sympathetic activity are two common signs of thyrotoxicosis[2]. Instance as losing weight despite having an increased appetite, impatience, palpitations, trembling, profuse sweating, loose bowel, fragility and fatigability and on clinical examination goitre (swelling in the front of the throat caused by the increased size of the thyroid gland), tachycardia (increased heart rate), atrial fibrillation, widened pulse pressure (pulse pressure>60), moist and warm skin, thyroid bruit and eye sign (lid retraction), lid lag, globe lag, fine tremors of lightly closed eyelids, untreated thyrotoxicosis can lead to osteoporosis of bones, menstrual disturbance (hypo, oligo or amenorrhea), erectile dysfunction and gynaecomastia.

In *Ayurveda,* there is no concept of Hypo and hyper condition of hormones. "*Dosha Dhatu Mala Moolam Hi Shariram*" [3] *dosa, dhatu,* and *mala* only are the basis of the body and disturbance and can lead to the disease condition. Aggravated *Pitta* and *Pitta dosa* lead to aggravated *Agni*, as *Pitta* have *teekshana* (keen), property aggravated *Pitta* make person hungry[4], because of *dravatva* (liquification) property *Pitta* will lead to frequent stools, because of *vishra* (smell of raw meat) property of there is profuse sweating, and due to *katu* (pungent) and *amala rasa* (sour), there are symptoms of *alpa sukra* (oligospermia), *alpa maithun sakti* (low libido), *alpa putra* (infertility), due to *ushna* (hot potency) property of *Pitta* it makes body intolerant to heat[5].

Case report

A 25-year-old female attended OPD no. 6 in *Kayachikitsa* department of CBPACS Khera Dabar Najafgarh, New Delhi, India on 02/09/2022 with complaints of palpitation, weakness, constipation and excessive sweating in all season; the patient was already diagnosed case of Hyperthyroidism in the past 3 years. According to the Thyroid test profile, TSH was 0.030 µIU/L with allopathic treatment (Tab Methimazole 10 mg thrice daily). However, there was no significant relief; symptoms were aggravated month by month, so the patient opted for *Ayurvedic* treatment for the same.

Written consent of patient: The consent was signed by the patient.

Case finding

The patient was nondiabetic, non-hypertensive and had no history of any chronic illness. The patient was taking a tab of Propranolol Hydrochloride 40 OD, a tab of Methimazole 10 mg thrice a day, and Vitamin-D3 60k for Hyperthyroidism. There is no family history of thyroid disorder. The patient has irregular bowel and is mostly constipated with increased appetite, coated tongue, and frequency of micturition 5-6 times a day. The patient's general condition was fair: Bp 132/94 mmHg, Pulse 78/min with no pallor/icterus, clubbing, or lymphadenopathy.

Timeline

The patient was already diagnosed with a case of Hyperthyroidism for 3 years. She took allopathic treatment. She visited CBPACS for the first time on 2 September 2022. Based on clinical examination and USG findings, we planned for Bio-

cleansing (therapeutic purgation), known as *Virechana karma*. For this, the patient was given 3 gm of *Trikatu churna* with lukewarm water twice daily before meals for the first five days. The patient reported improving her bowel and diet habits and feeling lighter. *Mahatriphala ghrita* was then recommended for therapeutic internal oleation at increasing doses (30, 60, 90, 120, and 150 ml) for the next five days.

Ghee was given in the early morning with warm water on an empty stomach. After five days of internal oleation, *samyak siddhi lakshana* (appropriate internal oleation symptoms) was found, including soft, unctuous skin and passing soft stools. After appropriate internal oleation, therapeutic massage was given from *Bala taila and* sudation therapy with *Dashmool kwath* for the following three days. *Virechan* was done with 2 teaspoons of *Trivritta avleha* with lukewarm water and 15 *vegas*. After that, a five-day plan of therapeutic dietary regime was included, with watery gruel prepared from barley for the first two diets, followed by a thick gruel of rice soup prepared from green gram for the succeeding two diets each, in that order. The patient was counselled to consume only wholesome foods and lead a healthy lifestyle while undergoing treatment. Then, oral medicine was advised to the patient for 3 months. After that, the patient was asked for a post-treatment ultrasound report for the assessment. (Table 1)

History of present illness

According to the patient, three years back, she was asymptomatic, then she gradually started developing symptoms like increased appetite, heat intolerance, palpitation on and off, anxiety and feeling of swelling in front of her neck. She took treatment for this problem from the private multispecialty hospital in Delhi. As per previous reports of the patient, her treatment includes Tab Propranolol Hydrochloride 40 OD, Tab Carbimazole (5 mg, 10 mg, 20 mg) BD, and Vitamin D 60k once a week with milk. Still, there was no improvement in symptoms of the patient and her TSH was fluctuating b/w Hyper and sometimes Hypo state.

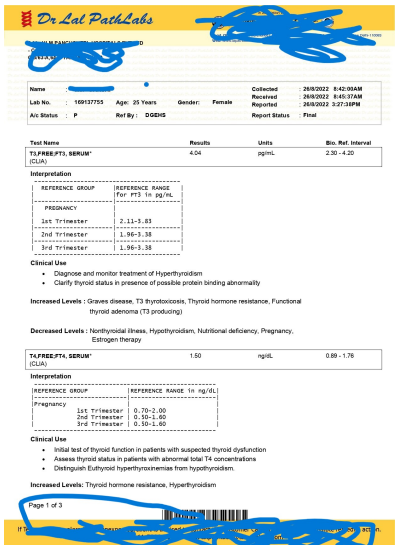
Treatment plan

Therapeutic Interventions

Timeline of events	
Duration	**Particular and interventions**
2 September 2022	Visited CBPACS for the first time. Already diagnosed case of Hyperthyroidism.
3 September 2022- 7 September 2022	*Deepan Pachana*: 3 grams of *Trikatu churna* (dried powder of *Zingiber officinale*, *Piper longum,* and *Piper nigrum*) were given morning and evening with lukewarm water before meals.
8 September 2022- 12 September 2022	*Snehapan* was given with *Panchtikta ghrita.*
13 September 2022 – 16 September 2022	*Snehan* (external oleation) with *Mahanaryan* oil. *Sarvang Swedan* with *Dashmool kwath.*
17 September 2022	*Virechan karma* (therapeutic purgation) with *Sansarjana karma* (posttherapy dietetic regimen for revival) was done.
17 September 2022- 24 September 2022	*Sansarjana karma* (posttherapy dietetic regimen for revival) was done.
25 September 2022 – 8 November 2022	*Shamana* (palliative procedures) drugs were given in the form of *Aarogyavardhini vati* 2 tab daily morning and evening, *Kanchanar Guggulu* 2 tab daily morning and evening and *Triphala churna* 5 gram in night with lukewarm water.
9 November 2022	Advised for Thyroid Profile Test.
10 November 2022	The Thyroid Profile Test is within normal range, i.e. TSH was 4.01 µIU/L
11 November 2022	Follow up with lifestyle and diet modification

OBSERVATION AND RESULT

Screening date	**Result**
26/8/2022	T_3-4.04 pg/ml, T_4- 1.50 ng/ml, TSH-0.030 µIU/ml
21/9/2022	T_3 -1.48 ng/ml, T_4 – 11.10 µg/dl TSH- 0.08 µIU/ml
10/11/2022	T_3 -1.19 ng/ml, T_4 – 10.30 µg/dl TSH- 4.01 µIU/ml



Dr Lal PathLabs

Name : [redacted]
Lab No. : 169137755 Age: 25 Years Gender: Female
A/c Status : P Ref By : DGEHS
Collected : 26/8/2022 8:42:00AM
Received : 26/8/2022 8:45:37AM
Reported : 26/8/2022 3:27:38PM
Report Status : Final

Test Name	Results	Units	Bio. Ref. Interval
T3,FREE,FT3, SERUM* (CLIA)	4.04	pg/mL	2.30 - 4.20

Interpretation

REFERENCE GROUP	REFERENCE RANGE for FT3 in pg/mL
PREGNANCY	
1st Trimester	2.11-3.83
2nd Trimester	1.96-3.38
3rd Trimester	1.96-3.38

Clinical Use
- Diagnose and monitor treatment of Hyperthyroidism
- Clarify thyroid status in presence of possible protein binding abnormality

Increased Levels : Graves disease, T3 thyrotoxicosis, Thyroid hormone resistance, Functional thyroid adenoma (T3 producing)

Decreased Levels : Nonthyroidal illness, Hypothyroidism, Nutritional deficiency, Pregnancy, Estrogen therapy

T4,FREE,FT4, SERUM* (CLIA)	1.50	ng/dL	0.89 - 1.76

Interpretation

REFERENCE GROUP	REFERENCE RANGE in ng/dL
Pregnancy	
1st Trimester	0.70-2.00
2nd Trimester	0.50-1.60
3rd Trimester	0.50-1.60

Clinical Use
- Initial test of thyroid function in patients with suspected thyroid dysfunction
- Assess thyroid status in patients with abnormal total T4 concentrations
- Distinguish Euthyroid hyperthyroxinemias from hypothyroidism.

Increased Levels: Thyroid hormone resistance, Hyperthyroidism

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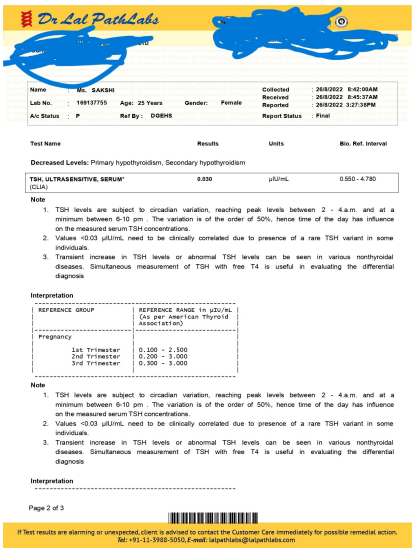

Dr Lal PathLabs

Name : MS. SAKSHI
Lab No. : 169137755 Age: 25 Years Gender: Female
A/c Status : P Ref By : DGEHS
Collected : 26/8/2022 8:42:00AM
Received : 26/8/2022 8:45:37AM
Reported : 26/8/2022 3:27:38PM
Report Status : Final

Test Name	Results	Units	Bio. Ref. Interval
TSH, ULTRASENSITIVE, SERUM* (CLIA)	0.030	µIU/mL	0.550 - 4.780

Decreased Levels: Primary hypothyroidism, Secondary hypothyroidism

Note
1. TSH levels are subject to circadian variation, reaching peak levels between 2 - 4.a.m. and at a minimum between 6-10 pm . The variation is of the order of 50%, hence time of the day has influence on the measured serum TSH concentrations.
2. Values <0.03 µIU/mL need to be clinically correlated due to presence of a rare TSH variant in some individuals.
3. Transient increase in TSH levels or abnormal TSH levels can be seen in various nonthyroidal diseases. Simultaneous measurement of TSH with free T4 is useful in evaluating the differential diagnosis

Interpretation

REFERENCE GROUP	REFERENCE RANGE in µIU/mL (As per American Thyroid Association)
Pregnancy	
1st Trimester	0.100 - 2.500
2nd Trimester	0.200 - 3.000
3rd Trimester	0.300 - 3.000

Note
1. TSH levels are subject to circadian variation, reaching peak levels between 2 - 4.a.m. and at a minimum between 6-10 pm . The variation is of the order of 50%, hence time of the day has influence on the measured serum TSH concentrations.
2. Values <0.03 µIU/mL need to be clinically correlated due to presence of a rare TSH variant in some individuals.
3. Transient increase in TSH levels or abnormal TSH levels can be seen in various nonthyroidal diseases. Simultaneous measurement of TSH with free T4 is useful in evaluating the differential diagnosis

Interpretation

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If Test results are alarming or unexpected, client is advised to contact the Customer Care immediately for possible remedial action.
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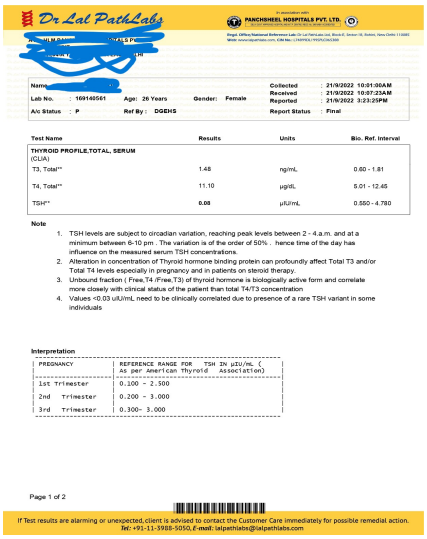

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PANCHSHEEL HOSPITALS PVT. LTD.

Name : [redacted]

Lab No. : 109140561 Age: 26 Years Gender: Female

A/c Status : P Ref By : DGEHS

Collected : 21/9/2022 10:01:00AM
Received : 21/9/2022 10:07:23AM
Reported : 21/9/2022 3:23:25PM
Report Status : Final

Test Name	Results	Units	Bio. Ref. Interval
THYROID PROFILE,TOTAL, SERUM (CLIA)			
T3, Total**	1.48	ng/mL	0.60 - 1.81
T4, Total**	11.10	µg/dL	5.01 - 12.45
TSH**	0.08	µIU/mL	0.550 - 4.780

Note

1. TSH levels are subject to circadian variation, reaching peak levels between 2 - 4.a.m. and at a minimum between 6-10 pm . The variation is of the order of 50% . hence time of the day has influence on the measured serum TSH concentrations.
2. Alteration in concentration of Thyroid hormone binding protein can profoundly affect Total T3 and/or Total T4 levels especially in pregnancy and in patients on steroid therapy.
3. Unbound fraction (Free,T4 /Free,T3) of thyroid hormone is biologically active form and correlate more closely with clinical status of the patient than total T4/T3 concentration
4. Values <0.03 uIU/mL need to be clinically correlated due to presence of a rare TSH variant in some individuals

Interpretation

PREGNANCY	REFERENCE RANGE FOR TSH IN µIU/mL (As per American Thyroid Association)
1st Trimester	0.100 - 2.500
2nd Trimester	0.200 - 3.000
3rd Trimester	0.300- 3.000

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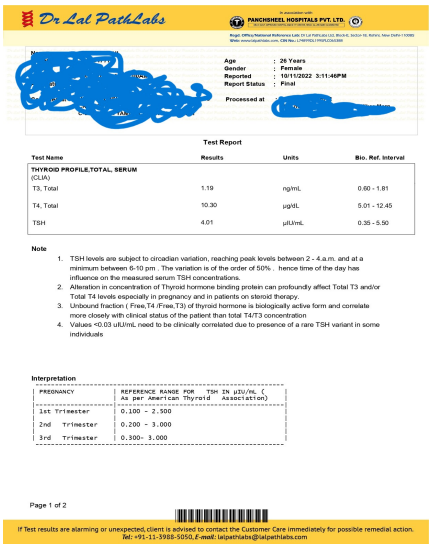

Dr Lal PathLabs

PANCHSHEEL HOSPITALS PVT. LTD.

Age : 26 Years
Gender : Female
Reported : 10/11/2022 3:11:46PM
Report Status : Final
Processed at : [redacted]

Test Report

Test Name	Results	Units	Bio. Ref. Interval
THYROID PROFILE,TOTAL, SERUM (CLIA)			
T3, Total	1.19	ng/mL	0.60 - 1.81
T4, Total	10.30	µg/dL	5.01 - 12.45
TSH	4.01	µIU/mL	0.35 - 5.50

Note

1. TSH levels are subject to circadian variation, reaching peak levels between 2 - 4.a.m. and at a minimum between 6-10 pm . The variation is of the order of 50% . hence time of the day has influence on the measured serum TSH concentrations.
2. Alteration in concentration of Thyroid hormone binding protein can profoundly affect Total T3 and/or Total T4 levels especially in pregnancy and in patients on steroid therapy.
3. Unbound fraction (Free,T4 /Free,T3) of thyroid hormone is biologically active form and correlate more closely with clinical status of the patient than total T4/T3 concentration
4. Values <0.03 uIU/mL need to be clinically correlated due to presence of a rare TSH variant in some individuals

Interpretation

PREGNANCY	REFERENCE RANGE FOR TSH IN µIU/mL (As per American Thyroid Association)
1st Trimester	0.100 - 2.500
2nd Trimester	0.200 - 3.000
3rd Trimester	0.300- 3.000

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RESULTS AND DISCUSSION

Probable Mode of Action of *Virechan* (Therapeutic Purgation)

Elimination of increased dosha from *adhomarga* is called *Virechana*, which has a direct effect on *agnisthana*. *Virechana* (therapeutic purgation), a therapy method that focuses on intestinal cleaning, has as its end goal to produce *Agni*. *Samyaka Virechana* karma causes all *srotasas* (body channels) to clear, the sense organs to feel fresher, the body to feel lighter, the metabolism to improve, and the body to become disease-free[6]. *Agni's* state can be increased, which leads to better health, stronger *Ojas*, and higher quality of life. *Agni* is considered the foundational element for a person's health and life. The state of normalcy is disturbed and the person develops various diseases when the *Agni* is out of equilibrium, which can be caused by either *tikshna* (hyperfunction), *manda* (hypofunction), or *vishama* (sometimes hyperfunction, sometimes hypofunction). If the *Agni* ceases to function, the person dies. Hence, the *Agni* is alleged to be the primary reason for health and longevity[7].

Numerous studies have shown that purgation affects the gut microbiota. One such study showed that, following purgation, the gut flora underwent an instantaneous and considerable change. After fourteen days, the bacterial recolonization was re-established after the total microbial load had decreased by 31-fold. Each person had four of their stools sampled. They included a baseline examination performed the day before intestinal lavage, an examination following the lavage, and two more examinations performed 14 and 28 days afterwards. The phylogenetic microarray was enhanced with quantitative PCR (qPCR) investigation of the all-out microbes and methanogenic archaea. Also, in comparison to the baseline, the microbial profiles showed a notable decrease throughout the bowel cleansing [8]. The study elaborates on the Ayurvedic concepts of *Virechana* and *samsarjan karma* (a specific diet after bowel cleansing), where *Virechana karma* clears the bowel of any harmful substances and aids in the correction of dysbiosis while *samsarjan karma* raises the *Agni* to its normal level and establishes eubiosis.

Probable Mode of Action of *Shaman chikitsa*

Arogyavardhini Vati

The drug *Arogyavrdhni vati* is mentioned in *Bhaishajya Ratnavali Kustha Rogadhikar* and also indicated as *deepan* (appetizer), *pachan* (digestant), *pathya* (channels or pathway *dosha, dhatu, mala*), *hridya* (organ which controls prana), *medovinashani* (reduce body fat), *malshuddikari nittya* (daily detox). Manifestation found in hypothyroidism shows that these are the result of impaired *Agni,* keeping in mind the possible effect drugs in normalizing the impaired *Agni*. So, it aids in the appropriate nutrient absorption in the body and enhances digestion.

Kanchanaar Guggulu

Kanchanaar guggulu is mentioned in *Bhaishajya Ratnawali* in *Galganda Rogadhikar.* It is a chemical formulation used as a thyroid hormone regulator in clinical practice. It manifests the cytotoxic impact by preventing cell division (antimitotic) and lowering cell proliferation. The antimitotic and antiproliferative effects of *Kanchnaar Guggulu* may be caused by the presence of flavonoids and phenolics[9].

Triphala Churna

The drug *Triphala churna* is a combination of three formulations *Haritaki, Vibhataki,* and *Aamalki.* Research discovered that the formula is possibly effective for several clinical illnesses, such as an increase in hunger, acidity, antioxidants, anti-inflammatory, immune-modulating, anti-bacterial, anti-mutagenic, anti-neoplastic, chemoprotective, and radioprotective properties. The polyphenols in *Triphala* influence the microbiome of the human gut, promoting the growth of good bacteria like *lactobacillus* and *bifidobacteria* while preventing the growth of bad bacteria[10].

CONCLUSION

The thyroid is endocrine disorder that result in disturbed metabolism. Metabolism depends upon *Agni.* If *Agni* is corrected, metabolism will function correctly. For that, *srotoshodhan, deepan,* and *pachan* was therapeutic lines of treatment. The patient took treatment approximately 3 months and the patient found significant improvement in symptoms of Hyperthyroidism and raised TSH from 0.030 µIU/ml to TSH- 4.01 µIU/ml, and T_3- 4.04 pg/ml, T_4-1.50 ng/ml to T_3 -1.19 ng/ml, T_4 – 10.30 µg/ml that is within normal limits.

ACKNOWLEDGEMENT

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