IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 16, Issue 12 Ver. VI (Dec. 2017), PP 55-63
www.iosrjournals.org

"A Study of Hyperthyroidism in Pregnancy"

Vikrant Bhagat[1], *Dhirendra Yadav[2], Sameer Yadav[3],
N D Moulick[4,] N D Karnik[5]

[1] Speciality Medical Officer, [2,3] Assistant Professor, [4] Professor, [5] Professor and HOD, Department of Medicine, LTMMC & LTMGH, Sion, Mumbai 22, Maharashtra, India.
*Correspondence Author: * Dhirendra Yadav*

Abstract
Background: *Overt hyperthyroidism constitutes special risk to the mother including precipitation of hypertension, CCF & pre-eclampsia as well as higher rate of miscarriage, pre-term delivery & placental abruption. It can lead to neonatal & foetal hyperthyroidism with risk of IUGR & stillbirth.*
Objectives: *This study was conducted to study various clinical & laboratory profile of pregnant patients with hyperthyroidism along with correlation of maternal & foetal outcome.*
Methods: *This article reviews our experience with 40 hyperthyroid pregnant patients (IPD & OPD) who were included in the study after screening them on their first visit and after valid written informed consent. Patient's demographic data; symptoms; past medical & obstetric history; diet & drug intake; comorbid conditions; clinical, local (including thyroid enlargement & eyes) & systemic examination findings; routine & special investigation findings; maternal complications and both maternal & foetal outcome were all documented on case record form. Chi-square (Pearson's) and Fischer exact test were used to calculate the statistical significance and a P value of 0.05 or less for Chi-square test & 0.20 or less for Fisher exact test considered statistically significant.*
Results: *Commonest symptom was palpitation (45%) and commonest sign was tachycardia (82.5%); Goitre was present in 11 cases (27.5%); Redness of eye (25%) was most common eye signs; Anaemia was detected in 50% of cases along with hypocalcaemia (95%). Majority (97.5%) of patient had serum Anti-TPO antibody positivity with 60% patients having overt hyperthyroidism. Maternal outcome was better with only 7.5% cases had first trimester abortion whereas 16.67% foetuses were LBW & 2.78% had hypothyroidism.*
Conclusion: *Universal screening for hyperthyroidism should be done in all age group of pregnant patients with special attention to older women to improve maternal & foetal outcome. With adequate treatment and regular follow up, morbidity and mortality due to hyperthyroidism in pregnancy can be prevented.*
Keywords: *Hyperthyroidism, CCF, Low birth weight (LBW), Intrauterine growth retardation (IUGR).*

Date of Submission: 01-12-2017 Date of acceptance: 14-12-2017

I. Introduction

Thyrotoxicosis affects 1-3.5% of all pregnancies and its major cause is gestational hyperthyroidism & Grave's disease, less common causes are multinodular goitre & toxic adenoma and rare causes are subacute or silent thyroiditis &Struma ovarii.Overt hyperthyroidism constitutes a special risk to mother and foetus. It can precipitate hypertension, CCF & pre-eclampsia in pregnant women along with higher rates of miscarriage, preterm delivery & placental abruption. Foetus may have hyperthyroidism due to trans-placental passage of TRAb in Grave's diseasewhich can present after 20 weeks withtachycardia, cardiomegaly, hydrops, advanced bone age, intrauterine growth restriction and stillbirths. They may develop hypothyroidism due to suppression of foetal TSH or due to trans-placental transfer of Anti-thyroid drugs (ATDs).The aim of ATDs therapy in pregnancy is to maintain free T_3 in the upper limit of the reference range or slightly above. Propylthiouracil (PTU) is recommended ATDs in first trimester; whereas Methimazole (MMI) should be the ATDs for 2^{nd}& 3^{rd} trimesters. Serum TSH & free thyroid hormone should be monitored every 2-6 weeks. Surgery is indicated in 2^{nd} trimester only if patient has severe adverse reactions to ATDs or they are used in very high dosages. Radioiodine therapy is contraindicated in pregnancy due to its deleterious effects on foetus. Foetal ultrasonography monitoring is recommended in pregnant women with elevated TRABs or TPO antibody treated with ATDs from 18-22 or 20-22 weeks of gestation to detect foetal thyroid dysfunction.

II. Material & Methods

This was a prospective observational study carried out after Institutional Ethics Committee approval on pregnant patients with hyperthyroidism (overt/subclinical) seen in OPD & IPD of a tertiary care centre over a period of 18 months. Pregnant patients diagnosed with hyperthyroidism through screening at their first visit in

general medicine ward, Obstetrics ward (IPD) or follow up cases in OPD (Medical, Endocrine or Gynaecology) were enrolled in the study after obtaining a valid written informed consent.

Patients demographic details, chief complaints, obstetric history, diet intake, history of drugs intake like amiodarone, lithium, α-Interferon, iodine containing contrast agents & comorbid conditions were noted.
Clinical examination was done with measurement of height, weight, temperature, pulse, blood pressure, respiratory rate. Thyroid examination was done for goitre under following headings-inspection, palpation, auscultation looking for size, shape, tenderness, mobility, and lymphadenopathy, movement with deglutination & movement with tongue. Eyes were examined for range of movements, tenderness, lacrimation, retro-orbital pain, papilledema. Dermatological examination was done for warm skin, moisture & pretibial oedema. Relevant systemic examination especially cardiovascular was done.Routine investigations like Complete blood count (CBC), Random Blood Sugar (RBS), Blood urea nitrogen (BUN), Serum Creatinine, Serum Electrolytes, LFTs & ECG were done. Special investigations like TSH, Free T_3 & T_4, Anti-TPO antibodies, β-HCG, 2-D Echo, USG Thyroid. USG abdomen& pelvis were sent. Fundoscopy was done to rule out papilledema. Patients were followed up with Serum TSH, Free T_4 4 weekly till pregnancy and postpartum for 3 months.Maternal Complications including pre-eclampsia, GDM, thyroid storm and outcome including FTND, Caesarean section, abortion, MTP were noted & treatment given accordingly. Patient with overt hyperthyroidism were given treatment with propylthiouracil (PTU) in 1^{st} trimester and neomercazole (NMZ) in 2^{nd}& 3^{rd} trimester. Dosages of both drugs were adjusted according to Free T_4 level. Foetal outcomes were noted as either no abnormalities or abnormalities including LBW, pre-mature baby, foetal hypothyroidism, IUFD & teratogenicity were noted in the Performa's.

III. Data Analysis

Chi Square (Pearson's) & Fischer Exact Test were applied to calculate the statistical significance of the accumulated data comparing various parameters. A P value of 0.05 or less for Chi Square test & 0.2 or less for Fisher Exact test was considered statistically significant.

3.1 According to American thyroid association:
The new recommendations for TSH levels during pregnancy are the following:
Reference range: First trimester: 0.1-2.5 uIU/ml
1. Second trimester: 0.2-3.0 uIU/ml
2. Third trimester: 0.3-3.0 uIU/ml
Any values less than lower limit is considered as hyperthyroid in pregnancy.

3.2Subclinical hyperthyroidism in pregnancy-
Subclinical hyperthyroidism is characterized by circulating thyrotropin (thyroid-stimulating hormone; TSH) levels below the reference range for each pregnancy and normal serum thyroid hormone levels (FT4 and FT3).
3.3Overt hyperthyroidism in pregnancy-
Overt hyperthyroidism is defined as the syndrome of hyperthyroidism associated with suppressed TSH and elevated serum levels of FT4 or FT3.

IV. Definition

4.1 Abortion
Threatened abortion: is vaginal bleeding that occurs in the first 20 weeks of pregnancy indicate that a miscarriage is possible. Missed abortion: occurs when a foetus dies, but the body does not recognize the pregnancy loss or expel the pregnancy tissue.
Spontaneous abortion: the foetus is born before the 20th week of pregnancy which is not viable.
4.2 Lbw(Low Birth Weight)
live born infants with birth weight less than 2,500 g in a given time period.Low birth weight may be subdivided into very low birth weight (less than 1500 g) and extremely low birth weight (less than 1 000 g).
4.3Premature birth/preterm birth
Preterm is defined as babies born alive before 37 weeks of pregnancy are completed. There are sub-categories of preterm birth, based on gestational age:
1. Extremely preterm (<28 weeks)
2. Very preterm (28 to <32 weeks)
3. Moderate to late preterm (32 to <37 weeks).

4.5Foetal hypothyroidism
Foetal hypothyroidism is inadequate thyroid hormone production in new-born infants.Diagnosis of foetal hypothyroidism is confirmed by demonstrating decreased levels of serum thyroid hormone (total or free

T4) and elevated levels of thyroid-stimulating hormone (TSH). A cut off value of TSH >20 miu/l is adequate for neonatal thyroid screening in Indian settings.

4.5IUFD/Stillbirth: is defined as the death of a foetus at any time after the twentieth week of pregnancy

4.6 Foetal anomaly: in case of pregnant hyperthyroid pt.: -ASD, VSD

4.7 Anaemia: during pregnancy:

WHO defines anaemia in pregnancy as Haemoglobin (Hb) concentration of less than 11 g/dl.

ICMR (Indian council of medical research) describe four grades of anaemia depending upon the Hb levels:

4.8Grades of anaemia Hb value(g/dl)

Mild 9-10.9

Moderate 7-9

Severe <7

Very severe <4

4.9 Hypocalcaemia:

Hypocalcaemia was defined as corrected serum total calcium level < 2.12 mmol/l or less than 8.5 mg/dl(normal value 2.1-2.6 mmol/l or 8.5-10.42 mg/dl).

4.10 Pre-eclampsia-

Pre-eclampsia is a disorder of vascular endothelial malfunction and vasospasm that occurs after 20 weeks' gestation and can present as late as 4-6 weeks postpartum. It is clinically defined by hypertension and proteinuria, with or without pathologic oedema.

V. Results

5.1Age group (Table 1)

In the present study, out of 40 cases, 37 cases (92.5%) were less than 30 years of age and 3 cases were of more than 30 years.

5.2Symptoms (Table 2) & Signs

Palpitations (45%) was the most common symptoms followed by weight loss (35%) & restlessness (32.5%).

5.3Gravida Status

Majority of patients (55%) were multigravida and there was a single case with bad obstetric history.

5.4 Signs

Tachycardia was the most common sign present in 33 patients (82.5%). Only 5 % cases had blood pressure (BP) > 140 mmHg (systolic).

Goitre was present in 11 patients (27.5%).

5.5Eye Signs (Table 3)-11 patients (27.5%) had eye signs with most common being redness of eyes (25% of case).

5.6 Dermatological signs (Table 4) were present in 5 patients (12.5%) with warm skin being the most common presentation in 7 patients followed by sweating in 4 patients.

5.7Anaemia (Table 5& 6) was detected in 50% of patients with majority of them (60%) having mild anaemia.

5.8 Hypocalcaemia (Table 7A, 7B & Figure 1) was present in 38 patients (95%) which was statistically significant.

5.9 Anti-TPO Antibody (Table 8A, 8B & Figure 2) were present in 39 patients (97.5%) which was statistically significant as per Pearson's Chi Square Test with P value of <0.001.

24 patients (60%) had overt hyperthyroidism while 16 patients (40%) had subclinical hyperthyroidism.

USG showed evidence of thyroiditis in 9 patients (22.5%) in the form of heterogeneous echotexture & normal to decreased vascularity.

5.10 Follow up (Table 9A, 9B & Figure 3)-On follow up after 3 months postpartum subclinical hyperthyroidism increased from 16 cases to 26 cases (40% to 65%) & overt hyperthyroidism decreased from 24 cases to 14 cases (60% to 35%) suggestive of adequate control with pharmacotherapy (P value <0.20 statistically significant).

5.11Maternal complications & Outcome (Table 10& 11)-2 patients (5%) had pre-eclampsia which were managed adequately with antihypertensive medications. 27 (67.5%) patients had Full Term Normal Delivery (FTND), 9 patients (26.5%) underwent LSCS, 3 patients (7.5%) had abortion and 1 patient had MTP.

5.12Foetal Outcome and Complications (Table 12 & 13) was good in 26 cases (72.22%), while it was poor in 10 cases (27.7%) with LBW present in 6 cases (16.67%), 2 cases were premature, 1 was IUFD & 1 foetus has hypothyroidism.

VI. Discussion

This study is prospective study of patients presenting with hyperthyroidism during pregnancy in tertiary care centre.40 patients were included in this study and followed up 18 months.

6.1 Age distribution:
Patient were divided into 2 age groups.92.5% of cases(37 cases) were group less than 30 years of age and 7.5% of cases(3 cases) were more than 30 years of age.
6.2Gurleen Kaur bhinderet al[1] : 92.85% are in the age group less than 30 years and 7.15% in age group more than 30 years in hyperthyroid pregnant patients.
This was very similar to our study. An analysis of age group distribution showed that majority of women were less than 30 years of age, this can be easily explained by the fact that maximum number of pregnant women who report to the OPD and IPD are in this age group. Hence, this study suggests that universal screening to be done for hyperthyroidism in all age groups, with specific attention and intervention being given to the increasing age group.
6.3Signs and symptoms: Palpitation was most common symptoms (45%) followed by weight loss (35%) and restlessness (32.5%) in hyperthyroid pregnant patients**.**
6.4 History: 2.5% cases had bad obstetric history as recurrent 1st trimester abortion in hyperthyroid pregnant patients**.**
Overt hyperthyroidism can cause recurrent pregnancy loss but by early management of hyperthyroidism.
6.5Gravida
Patients were divided into two groups primigravida and multigravida .45 % cases were of primigravida and 55% cases were multigravida**.**
6.6Alpana Singh et al[2:]
Found 66.6% primi cases and 33.33% multi cases of hyperthyroidpregnant.

Inference

Study	Alpana Singh et al	Present study
Primi	66.66%	45%
Multi	33.33%	55%

6.7Pulse rate: (82.5%) Hyperthyroid pregnant patients had tachycardia.
6. 8Blood Pressure: Only 2 cases had BP >140mmHg (5%) and both had pre-eclampsia and remaining 38 cases (95%) had BP<140mmHg.

VII. Goiter

Goiter present in 11 cases (27.5%) in hyperthyroid pregnant patients while 72.5% cases didn't have goiter.
7.1 Eye signs and symptoms:
Most common symptom was redness of eye (25%) in hyperthyroid pregnant patients.
7.2 Dermatological signs and symptoms:
Warm skin most common presentation (7 cases out of 40(17.5%)) in hyperthyroid pregnant patients.
7.3 Hemoglobin
Anemia was present in 50% cases and remaining 50% cases didn't have anemia.
Anemic was divided into mild, moderate, severe and very severe. 60% cases had mild anemia, 35% cases had moderate anemia, 5% had severe anemia. None of them required blood transfusion.
7.4Dhara Singh et al[3:]
In his study found 60% cases were anemic and remaining 40% cases were
Non-anemic in hyperthyroid pregnant patients. Which was very similar to our study.

Inference

Study group	Dhara Singh et al	Present study
Anemia	60%	50%
No anemia	40%	50%

7.5 Calcium: 95% cases were hypocalcemia in hyperthyroid pregnant patients. **(P-value=0.000, significant).**
7.6TPO (Thyroid peroxidase) antibody: found 97.5% cases were positive and 2.5% cases were negative for TPO Antibody.
7.8Malgorzata gietkar czernel et al[4:] found 64.28% cases were TPO Antibody positive and 35.71% cases were TPO antibody negative in hyperthyroid pregnant patients.

Inference

TPO Antibody	Malgorzata gietkar czernel et al	Present study (p-value=0.001, significant).
Positive	64.28%	97.5%
Negative	35.71%	2.5%

7.9 Overt/Subclinical hyperthyroidism
40% pregnant patients had sub-clinical hyperthyroidism and 60 % cases had overt hyperthyroidism.
7.10 Gurleen Kaur bhinderet al[1:] Found 100 % cases of subclinical hyperthyroidism in his study in pregnancy.
7.11Dr.jayati nath et al[5:] found 66.66% cases of overt hyperthyroidism and 33.33% cases of subclinical hyperthyroidism in pregnancy.
7.12Forough saki et al[6:] Found 22.22% cases of subclinical hyperthyroidism and 77.77% cases of overt hyperthyroidism in pregnancy.
7.13Nazarpour et al[7:] found 10.52% cases of overt hyperthyroidism and 89.47% cases of subclinical hyperthyroidism in pregnancy.
7.14 Nirmala kumara et al[8:] found 25% cases of overt and 75% cases of subclinical hyperthyroidism in pregnancy.

Inference

Study	Gurleen Kaur bhinder et al	Dr.jayati nath et al	Forough saki et al	Nazarpour et al	Nirmala kumara et al	Present study
Overt	0%	66.66%	77.77%	10.52%	25%	60%
Subclinical	100%	33.33%	22.22%	89.47%	75%	40%

Our study was similar to Dr.Jayati nath et al study.
Overt hyperthyroidism has poor maternal and fetal outcome so early screening and management of overt hyperthyroidism should be done to prevent poor outcome.

7.15 USG (Thyroid)
22.5% cases on USG thyroid had thyroiditis and 77.5% cases had normal USG findings in hyperthyroid pregnant patients.
7.16 Malgorzata gietkar czernel et al[4:] Found 95.23% cases with thyroiditis on USG thyroid in hyperthyroid pregnant patients.

Inference

Usg thyroid	Malgorzata gietkar czernel et al	Present study
Abnormal	95.23%	22.5%
Normal	4.76%	77.5%

VIII. Follow up TSH, FT4

On follow up after 3 months post-partum subclinical hyperthyroidism in pregnancy increased from 16 cases to 26 cases (40 % to 65%) and overt hyperthyroidism in pregnancy decreased from 24 cases to 14 cases (60 % to 35%) suggestive of adequate control with pharmacotherapy.
Early and optimal management of pregnant patients of Overt Hyperthyroidism can decrease severity of disease and prognosis of patient's .**P value-significant**.

8.1Complications during pregnancy:
5% cases had preeclampsia in our study in hyperthyroidism.
8.2Nirmala kumara et al[8:] found 8.3% cases had pre-eclampsia in hyperthyroidism.
8.3Mannisto et al (2012-2013)[9:] found 32 cases (7.7%) of preeclampsia out of 417 cases of pregnant patient with hyperthyroidism.

Inference

Complications	Nirmala kumara et al	Mannisto et al(2012-2013)	Present study
Complications(pre-eclampsia)	8.3%	7.7%	5%

Above studies were similar to our study.

IX. Maternal Outcome

67.5% cases had FTND, 22.5% underwent LSCS, 7.5 % cases had 1st trimester abortion and 2.5% had MTP.
9.1 Dr.Jayati nath et al[5:] 100% cases had abortion in his study in hyperthyroidism.
9.2 Alpana Singh et al[2:] 33.33% cases had Abortion, 66.66% cases were FTND.
9.3 Nirmala kumara et al[8:] Had 20.83% cases of abortion in hyperthyroidism.
9.4 Tuija mannisto et al (2009)[10:]56 (19.9%) cases underwent LSCS out of 281 cases in hyperthyroidism.
9.5 Mannisto et al (2012-2013)[9:] Had FTND 285(68.4%) cases out of 417 cases in hyperthyroidism.
9.6 Casey et al[11:] 95 cases (21.9%) underwent LSCS out 433 cases in hyperthyroidism.

Inference:

Study	Dr.jayati nath et al	Alpana Singh et al	Nirmala kumara et al	Tuija mannisto et al(2009)	Mannisto et al (2012-2013)	Casey et al	Present study
FTND		66.66%			68.4%		67.5%
LSCS		0%		19.9%		21.9%	22.5%
Abortion	100%	33.33%	20.83%				7.5%
MTP							2.5%

Cases which had FTND were similar in **Alpana Singh et al[2] andMannisto et a [9] (2012-2013)** study as compare to our study.
Cases undergoing LSCS were similar in **Tuija mannisto et al[10] (2009)** and
Casey et al[11]study as compare to our study.
Overt hyperthyroidism during pregnancy can lead to poor maternal outcome. Early and optimal management of patients leads to good maternal outcome.

X. Fetal outcome

Found 16.67% cases were LBW, 5.56% cases were Premature birth/Preterm baby, 1(2.78%) cases had fetal hypothyroidism (2.78%) and 1 case (2.78%) was IUFD.
10.1 Forough saki et al[6:] Had 11.1% cases of preterm delivery in hyperthyroidism.
10.2 Nirmala kumara et al[8:]had4.15 % had stillbirth.
10.3 Tuija mannisto et al[10] (2009): LBW in 14 cases (4.9%) out of 281 cases and had Preterm deliveries in 16 cases (5.6%) out of 281 cases inn Pregnant hyperthyroid patients.
10.4 Malgorzata gietkar czernel et al[4:] had11.9% cases of fetal hypothyroidism in pregnant hyperthyroid patients.

Inference

Study	Forough saki et al	T.nirmala kumara et al	Tuija mannisto et al(2009)	Malgorzata gietkar czernel et al	Present study
Fetal hypothyroidism				11.9%	2.78%
IUFD		4.15%			2.78%
LBW			4.9%		16.67%
Preterm baby	11.1%		5.6%		5.56%

Preterm babies/deliveries in **Tuija mannisto et al[10] (2009)** were similar as compare to our study. Overt hyperthyroidism during pregnancy can lead to poor fatal outcome.
Hence early and optimal management and treatment of hyperthyroid patients can prevent poor foetal outcomes.

XI. Conclusion

Pregnant patients should routinely be screened for thyroid functions to detect hyperthyroidism and give them adequate treatment to prevent maternal and fetal complications. Patients with hyperthyroidism should be followed in the postpartum period to monitor efficacy of treatment. Adequate treatment and regular follow up will improve the maternal and fetal outcomes.

XII. Limitations

Certain limitation are present in our study:
1. Low sample size (40 cases).
2. We had not done TRAB (TSH receptor) Antibodies due to resource limited settings to rule out Grave's disease.

Bibliography

[1]. Savitha S Konin, Gurleen Kaur Bhinder. Detection of thyroid functions in early pregnancy as a universal. Journal of Evaluation of Medical and Dental Sciences 2013; Vol 12, Issue 49, December 09: Pages 9457-9465.
[2]. Singh A, Reddy MJ. Prevalence of thyroid dysfunction in Pregnancy and its Implications. Int J Med Sci Public Health 2015: 1247-1250.
[3]. Dhara Singh Meena, Indra Bharti, Sumitra Bora, Saroj Meena. Study of Thyroid Dysfunction in Pregnancy. Int J Curr Microbiod App Sci 2015; ISSN: 2319-7706; 4 (9): 91-97. Malgorzata Gietka-Czernel, Marzena Debska, Piotr Kretowicz, et al. Hyperthyroidism during Pregnancy-the role of measuring Maternal TSH Receptor Antibodies and Foetal Ultrasound Monitoring. Endokrynologia Polska November 2014; ISSN 0423-104X; Vol 65, Number 4: Pages 259-268.
[4]. Jayati Nath, S Dutta. A Clinical Study on Thyroid Dysfunction in Pregnancy and its Effect on the Fetomaternal Outcome. International Journal of Science and Research, September 2015; Volume 4, Issue 9: pages 2068-2070.

[5]. Forough Saki, Mohammad Hossein, Dabbagmanesh, et al. Thyroid Function in Pregnancy and its Influences on Maternal and Foetal Outcomes. Int J Endocrinol Metab Oct 2014; 12 (4); e19378.
[6]. Sima Nazarpour, Fahimeh Ramezani Tehrani, et al. Thyroid Dysfunction and Pregnancy Outcomes. Iran J Reprod Med 2015 Jul; 13 (7): 387-396.
[7]. Saraladevi R, Nirmala Kumari T, Shreen B, Rani V. Prevalence of Thyroid disorder in Pregnancy and Pregnancy Outcome. Int Arch Int Med (IAIM) 2016; 3(3): 1-11.
[8]. Tuija Mannisto, Pauline Medala, et al. Thyroid Diseases and Adverse Pregnancy Outcomes in a Contemporary US Cohort. J Clin Endocrinol Metab 2013 Jul; 98 (7): 2725-2733.
[9]. Mannisto T, Vaarasmaki M, Pouto A, et al. Perinatal Outcome of Children born to Mothers with Thyroid Dysfunction or Antibodies; a Prospective Population-Based Cohort Study. J Clin Endocrinol Metab 2009; 94: 772-9.
[10]. Casey BM, Dashe JS, Wells CE, McIntire DD, et al. Subclinical Hyperthyroidism and Pregnancy Outcomes. ObstetGynecal 2006; 107: 337-41.

Tables

Table 1: Age Distribution

Age	No.of cases	Percent
<30 years	37	92.5
>30 years	03	7.5
Total	40	100

Table 2: Symptoms and sign.

Symptoms and signs	No. Of cases	Percent
Palpitation	18	45.0
Weightloss	14	35.0
Restlessness	13	32.5
Fatigue	11	27.5
Nervousness	6	15.0
Muscle weakness	4	10.0
Headache	3	7.5
Tremor	3	7.5
Nausea	3	7.5
Irregular menses	3	7.5

Table 3: Eye signs and symptoms

Eye signs and symptoms	**No. Of cases**	**Percentage**
Decreased Range of movement	3	7.5
Redness	10	25
Tenderness	6	15
Lacrimation	3	7.5
Retro-orbital pain	4	10

Table 4: Dermatological signs and symptoms

Dermatological Signs and symptoms	**No. Of cases**	**Percentage**
Sweating	4	10
Pretibial edema	1	2.5
Warm skin	7	17.5
Normal	28	70

Table 5: Hemoglobin level

Hb level	No. Of cases	Percent
Anemic	20	50.0
No anemia	20	50.0
Total	40	100.0

Table 6: Grades of Anaemia

Grades of anemia	**No. Of cases**	**Percentage**
Mild	12	60
Moderate	7	35
Severe	1	5
Very severe	0	0
Total	20	100

Table 7A : Calcium level.

Calcium level	**No. Of cases**	**Percentage**
Normal	2	5
Hypocalcemia	38	95
Total	40	100

Figure 1

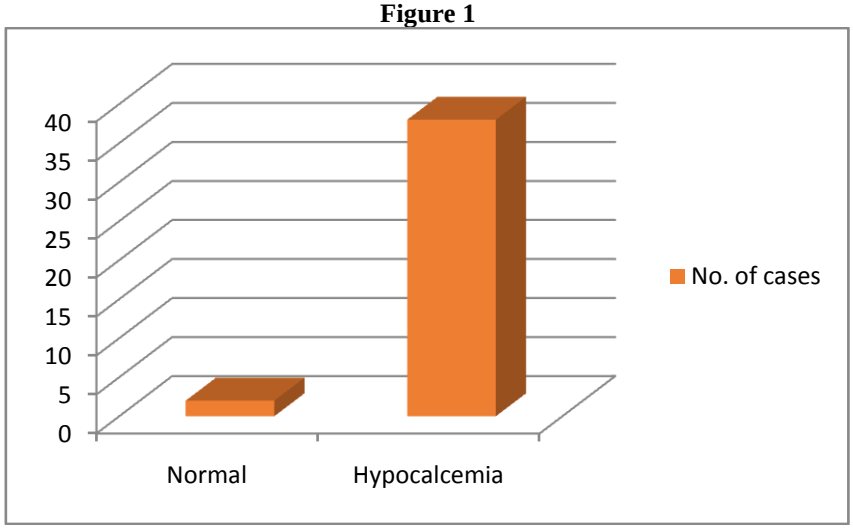

Table 7B: Hypocalcemia Stastical significance

Chi-square tests	Value	Df	P value	
Pearson chi-square	15.973[a]	1	.000	S

38 cases (95%) out of 40 had hypocalcemia. **p-value was significant**.

Table 8A: TPO(Thyroid peroxidase)Antibody(Ab)

TPO antibody	No. Of cases	Percent
Positive	39	97.5
Negative	1	2.5
Total	40	100.0

Figure 2: Anti-TPO Antibody

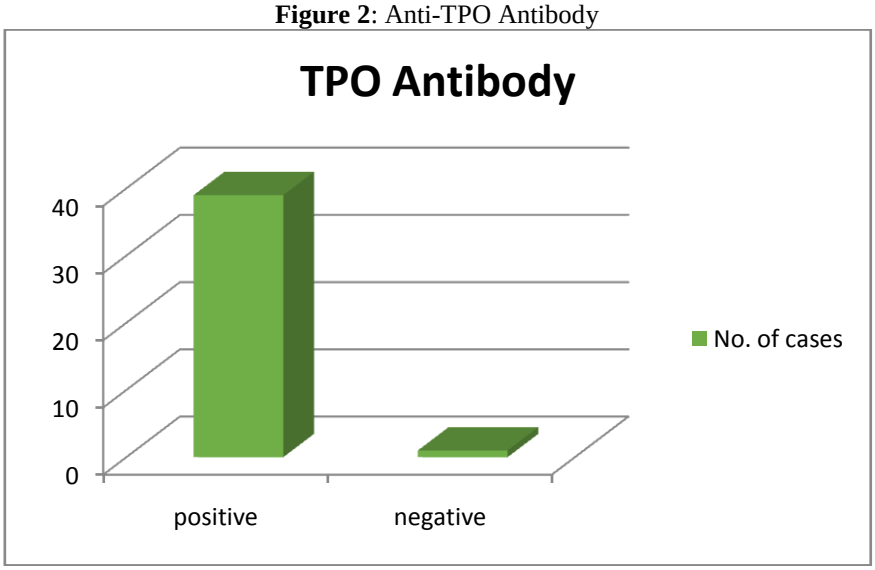

Table 8B: Statistical Significance of Ant-TPO Antibody
39 cases (97%) were Anti-TPO Antibody positive**. P-value was significant(0.001)**

Table 9: Follow up TSH,FT4 at 3 months post-partum.

Follow up diagnosis	No. Of cases	Percent
Subclinical	26	65.0
Overt	14	35.0
Total	40	100.0

Figure 3: Follow Up Diagnosis

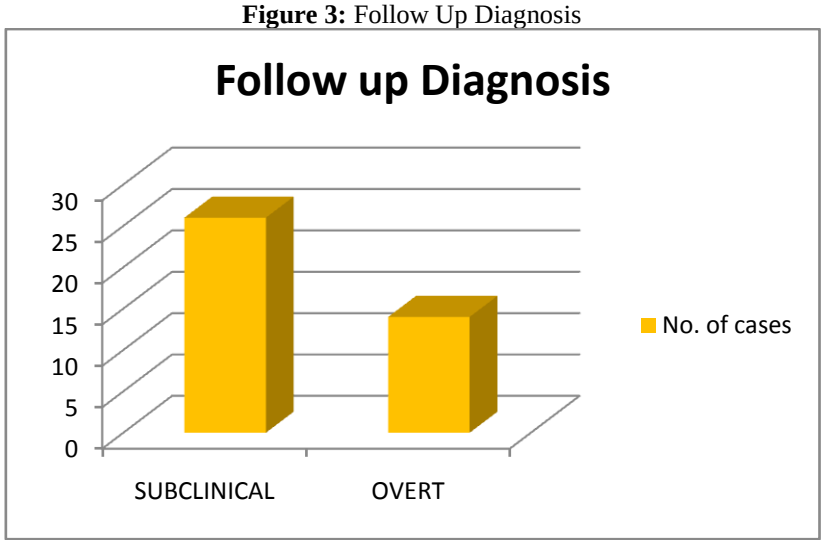

Table 9B: Stastical Significance of Follow up Diagnosis

Chi-square tests	Value	Df	P value	
Pearson chi-square	5.934[a]	1		
Fisher's exact test			.020	S

(P value-significant-0.20)

Table 10: Maternal outcome

Maternal outcome	**No. Of cases**	**Percentage**
FTND	27	67.5
LSCS	09	22.5
Abortion(1st trimester)	3	7.5
MTP	1	2.5
Total	40	100

Table 11: Maternal complication during pregnancy

Complications	**No. Of cases**	**Percentage**
Pre-eclampsia	2	5
No complications	38	95

Table 12: Foetal outcome

Fetal outcome	No. Of cases	Percent
Abnormality present	10	27.78%
No abnormality	26	72.22%

Table 13: Foetal Complications

Fetal outcome	No. Of cases	Percent
Fetal hypothyroidism	1	2.78%
IUFD	1	2.78%
LBW	6	16.67%
Premature baby	2	5.56%

*Dhirendra Yadav. ""A Study of Hyperthyroidism in Pregnancy"." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.12 (2017): 55-63