Research Paper Medical Science

Assessment of Thyroid Dysfunction During Pregnancy And its Obstetrical Outcome

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ABSTRACT

Objective : Early detection and timely intervention of thyroid dysfunction in antenatal women by universal screening as per recommendation of Indian Thyroid Society 2012 and to study their feto-maternal outcome.

Methods : Randomly selected 400 nullipara women attending antenatal clinic in 1st trimester were screened for thyroid dysfunction by S.TSH. If S.TSH is normal no further work up is required. If S.TSH is abnormal free T4 was measured,. Antenatal women with preconceptional thyroid dysfunction were excluded from study. LT4 was started in patients with hypothyroidism (subclinical and overt) and subclinical hyperthyroid were not given any treatment and propyl thio uracil was started in patients with overhyperthyroidism. follow up of these patients was done by S. TSH 4-6 weekly

Results : Thyroid dysfunction was seen in 16% of cases. 10% were subclinical hypothyroid, 4.75% were overt hypothyroid, 1.25% were subclinical hyperthyroid and no case of overt hyperthyroidism was detected. 25 (62.50%) cases of subclinical hypothyroid, 8 (42.10%) cases of overt hypothyroidism and 3 (60%) of subclinical hyperthyroidism were not having any risk factors. None of obstetrical and fetal complications were significantly associated with thyroid dysfunction.

Conclusion : High prevalence of thyroid dysfunction and absence of presence of risk factors in significant number of patients with thyroid dysfunction mandates universal screening of thyroid dysfunction. Early detection by universal screening and treatment with LT4 improves feto-maternal outcome.

KEYWORDS Universal screening, subclinical hypothyroidism, overt hypothyroidism

INTRODUCTION:

Thyroid disorders are one of the commonest endocrine problems during pregnancy. Many thyroid disorders may present or may be diagnosed for 1st trimester pregnancy. These are associated with increased incidences of Miscarriage, Anemia, Preeclampsia, gestational hypertension, Placental abruption, Preterm delivery and Postpartum hemorrhage in mother and increased incidences of adverse fetal outcome in terms of Low birth weight, Increased NICU admission and Perinatal morbidity and mortality. Thus prompt and correct diagnosis and its management are important.[1]

Thyroid disorders satisfy most of the criteria for a disease to warrant population screening. They are common, treatable and to some extent preventable conditions which pose special risks for pregnancy and the developing fetus. American Association of Clinical Endocrinologist 2002 (AACE)[2], Indian thyroid association 2012 (ITA)[3] and American Thyroid Association 2005 (ATA)[4] recommend universal screening of all antenatal patients.

As prevalence of thyroid dysfunction in pregnancy is very high Therefore universal screening of pregnant women for abnormal thyroid function and early replacement with LT4 in hypothyroidism is necessary to reduce maternal and fetal complications.

METHODS:

This hospital based descriptive type of observational study was conducted in Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur from the year 2012 onwards.

Randomly selected 400 nullipara women attending antenatal clinic in their first trimester were screened universally for thyroid dysfunction as recommended by Indian Thyroid Society 2012 by S.TSH. If S.TSH (normal range-0.1-2.5) is abnormal, fT4 (normal range-0.1-2.5) is measured. if both were normal, women were euthyroid. They did not required any further workup. If S.TSH is high and ft4 is normal these antenatal women were diagnosed as subclinical hypothyroidism. If S.TSH is high and fT4 is low, women were overt hypothyroidism. LT4 was started in subclinical and overt hypothyroid women. If S.TSH was low and fT4 was normal, women were subclinical hyperthyroid. No treatment was given to them, and women with low TSH and high fT4 who were overt hyperthyroid were given propyl thio uracil.

Follow up of these women was done for feto-maternal outcome.

RESULTS:

In our study we found 336 (84.00%) were Euthyroid and 64 (16%) of women were having thyroid dysfunction. 40 (10.00%) were subclinical hypothyroid, 19 (4.75%) were overt hypothyroid, 5 (1.25%) were subclinical hyperthyroid and none of cases were overt hyperthyroid (Table-1).

Among 59 hypothyroid cases and 5 hyperthyroid cases h/o miscarriage was most commonly associated risk factor. In 16 (40.00%) cases of subclinical hypothyroidism, 10 (52.70%) cases of overt hypothyroidism, 2 (40.00%) cases of subclinical hyperthyroidism h/o miscarriage was found to be associated and in 4 (10.00%) cases of subclinical hypothyroidism, 5 (26.30%) cases of overt hypothyroidism, 2 (40.00%) cases of subclinical hyperthyroidism and 0 (0.00%) cases of overt hyperthyroidism was associated with family h/o of thyroid disorder (Table-2).

Among 59 hypothyroid cases although many of them were having risk factor for thyroid dysfunction i.e. 22 (37.28%) cases with single risk factor, 4 (6.78%) cases with multiple risk factor and still 33 (55.94%) cases were identified without any risk factor for thyroid dysfunction. None of subclinical hyperthyroidism were having single risk factor, 2 (40.00%) cases were having multiple risk factor and 3 (60.00%) cases were identified without any risk factors (Table-3).

1 (2.5%) case of subclinical hypothyroid, 1 (5.26%) case of overt hypothyroid and 5 (1.49%) cases of euthyroid developed gestational hypertension. 4 (10%) cases of subclinical hypothyroid, 3 (15.78%) cases of overt hypothyroid, 1 (20.00%) cases of subclinical hyperthyroid and 15 (4.46%) cases of euthyroid developed preeclampsia. 1 (2.5%) case of subclinical thyroid, 1 (5.26%) case of overt hypothyroid and 4 (1.19%) cases of euthyroid developed abruptio. Prematurity was seen in 4 (10%) cases of subclinical hypothyroid, 2 (10.52%) cases of overt hypothyroid, 1 (20.00%) case of subclinical hyperthyroid and 15 (4.46%) cases of euthyroid (Table-4).

Prematurity was seen in 4 (10%) cases of subclinical hypothyroid, 2 (10.52%) cases of overt hypothyroid, 1 (20.00%) cases of subclinical hyperthyroid and 15 (4.46%) cases of euthyroid. 3 (7.5%) cases of subclinical hypothyroid, 2 (10.52%) cases of overt hypothyroid and 11 (3.27%) cases of euthyroid developed LBW baby. IUFD was seen in 2 (5%) cases of subclinical thyroid, 1 (5.25%) cases of overt hypothyroid and 4 (1.19%) cases of euthyroid. None of fetal complications were significantly associated with thyroid status of patients (Table-5).

DISCUSSION:

Prevalence of hypothyroidism in pregnancy in our study were similar to study done by Dr. Dinesh K Dhanwal et al (2011)[5] who found total hypothyroidism cases 14.3% of which 13.5% were subclinical by universal screening by taking cut off value of S.TSH > 4.5 mIU/L.

Results were also comparable with study done by Beata Matuszele et al (2011)[6] who found prevalence of hypothyroidism 10.4% of all cases by universal screening.

Vaquoero E et al (2013)[7] evaluate role of mild thyroid abnormalities in recurrent spontaneous abortion and found that mild thyroid abnormalities are associated with increased rate of miscarriage. This poor obstetrical prognosis seems to be related to an impaired thyroid adaptation to pregnancy and thyroid replacement therapy appears to be effective in preventing new miscarriage.

Goel P et al (2012)[8] studied associated risk factors and effects of hypothyroid in pregnancy and found that 34% new hypothyroid cases could be detected by universal screening. Risk factors for thyroid dysfunction were not significantly different in the screen positive and screen negative patient. Targeted screening could have missed one third of subclinical hypothyroid cases.

It can be clearly concluded that although presence of risk factor (single / multiple) has a strong association with development of thyroid disorder still antenatal women without any risk factor cannot be safely excluded from screening group to calculate actual burden of the disease.

Beata Matuszele et al (2011)[6] studied risk factors of thyroid disorder. One risk factor was found in 35.70%, two risk factors were found in 17.8% whereas in 46.40% patients none was present which indicates necessity of universal screening.

Results of our study was comparable with study done by Nahid Mostaghe et al (2008)[9] studied association of maternal hypothyroidism with preeclampsia and found that S.TSH level was not significantly associated with preeclampsia.

Results of our study was also comparable with Hirsch D et al (2013)[10] who studied pregnancy outcomes in women with severe hypothyroidism. They found that premature deliveries were not frequently seen in women with hypothyroidism. Intense follow up and LT4 treatment may improve pregnancy outcome

Mathalon et al (2006)[11] found prevalence of LBW (< 2.5 kg) baby 10.4% in hypothyroid group v/s 9.5% in Euthyroid group.

CONCLUSION:

Knowledge regarding the interaction between the thyroid and pregnancy is advancing at a rapid pace. Although it is well accepted that overt hypothyroidism and overt hyperthyroidism have a deleterious impact on pregnancy, studies are now focusing on the potential impact of subclinical hypothyroidism and subclinical hyperthyroidism on maternal and fetal health.

In present study we found 16% prevalence of thyroid dysfunction out of which 10% were diagnosed as subclinical hypothyroidism, 4.75% were overt hypothyroidism and 1.25% were subclinical hyperthyroidism. Except subclinical hyperthyroidism all of them were treated as per guidelines.

A large amount of retrospective data provides circumstantial evidence supporting an increased risk of adverse outcome from maternal subclinical hypothyroidism. In present study we have treated all subclinical hypothyroidism and found statistically insignificant complications so it is reasonable to consider LT4 treatment of all subclinical hypothyroid.

Our study supports universal screening for thyroid dysfunction in pregnancy in our population as the prevalence of this is 16%. Also to treat that cases except subclinical hyperthyroidism to improve fetomaternal outcome.

TABLES: Table – 1
Distribution of Cases According to S.TSH Levels

S.TSH	No.	%
Euthyroid	336	84.00
Subclinical Hypothyroidism	40	10.00
Overt Hypothyroidism	19	4.75
Subclinical Hyperthyroidism	5	1.25
Overt Hyperthyroidism	0	0.00
Total	400	100.00

Table – 2
Distribution of Cases According to Various Risk Factors for Thyroid Disorders

Risk Factors	Euthyroid		Subclinical Hypothyroid		Overt Hypothyroid		Subclinical Hyperthyroid		Overt Hyperthyroid		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Family H/o Thyroid / Endocrinological Disorder	3	0.90	4	10.00	5	26.30	2	40.00	0	0.00	14	3.50
Goiter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Type-I Diabetes	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
H/o Head on Neck Irradiation	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
H/o Miscarriage	38	11.40	16	40.00	10	52.70	2	40.00	0	0.00	66	16.50
Symptoms S/o Thyroid Disorders	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	41	12.20	20	50.00	15	78.95	4	80.00	0	0.00	80	20.00

Table – 3
Distribution of Cases According to Number of Risk Factors for Thyroid Disorders in Pregnancy

Risk Factors	Euthyroid		Subclinical Hypothyroid		Overt Hypothyroid		Subclinical Hyperthyroid		Overt Hyperthyroid		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
No	308	91.60	25	62.50	8	42.10	3	60.00	0	0.00	344	86.00
Single	27	8.10	13	32.50	9	47.30	0	0.00	0	0.00	49	12.25
Multiple	1	0.30	2	5.00	2	10.50	2	40.00	0	0.00	7	1.75

Table – 4
Distribution of Cases According to Obstetric Complications

Obstetric Complications	Euthyroid		Subclinical Hypothyroid		Overt Hypothyroid		Subclinical Hyperthyroid		Overt Hyperthyroid		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Gestational HTN	5	1.49	1	2.50	1	5.26	0	0.00	0	0.00	7	1.75
Preeclampsia	15	4.46	4	10.00	3	15.78	1	20.00	0	0.00	23	5.75
Abruptio	4	1.19	1	2.50	1	5.26	0	0.00	0	0.00	6	1.50
Prematurity	15	4.46	4	10.00	2	10.52	1	20.00	0	0.00	22	5.50
Myxoedema Coma	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

Gestational HTN – Subclinical hypothyroid (P= 0.4932) Significance – NS
Overt hypothyroid (P= 0.2828) Significance – NS
Preeclampsia - Subclinical hypothyroid (P = 0.1310) Significance – NS
Overt hypothyroid (P= 0.0636) Significance – NS
Abruptio - Subclinical hypothyroid (P= 0.4320) Significance – NS
Overt hypothyroid (P= 0.2417) Significance – NS
Prematurity - Subclinical hypothyroid (P= 0.1310) Significance – NS
Overt hypothyroid (P= 0.2287) Significance – NS

Table – 5
Distribution of Cases According to Fetal Complications

Fetal Complications	Euthyroid		Subclinical Hypothyroid		Overt Hypothyroid		Subclinical Hyperthyroid		Overt Hyperthyroid		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Congenital Malformation	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Prematurity	15	4.46	4	10.00	2	10.52	1	20.00	0	0.00	22	5.50
LBW	11	3.27	3	7.50	2	10.52	0	0.00	0	0.00	16	4.00
IUFD	4	1.19	2	5.00	1	5.25	0	0.00	0	0.00	7	1.75
Still Birth	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

Prematurity - Subclinical hypothyroid (P= 0.1310) Significance - NS
Overt hypothyroid (P= 0.2287) Significance - NS
LBW - Subclinical hypothyroid (P = 0.1777) Significance - NS
Overt hypothyroid (P= 0.1489) Significance - NS
IUFD - Subclinical hypothyroid (P = 0.1258) Significance - NS
Overt hypothyroid (P= 0.2417) Significance - NS

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