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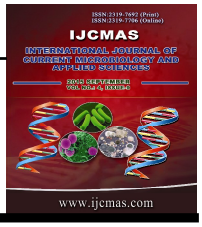

Original Research Article

Study of Thyroid Dysfunction in Pregnancy

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Keywords

Pregnancy, Thyroid disorder, Antenatal and postnatal complications

A B S T R A C T

This study was conducted to analyze the incidence, antenatal & postnatal complications, perinatal outcome and to be advocate routine screening for thyroid disorders in pregnancy in year July 2009 to June 2010 at Umaid hospital 'A Regional Institute of Maternal and Child Health associated with Dr. S. N. Medical College, Jodhpur. This study was prospective, interventional and observational study with hundred cases which was already diagnosed or diagnosed when suspected as pregnancy with thyroid disorders. Total number of patients who were admitted in labor room with pregnancy (from July 2009 to June 2010) 20454, out of these 7.82 % aborted in the form of complete & incomplete abortion, missed abortion. 1.70 % patient delivered before the completion of 37 weeks i.e. preterm and 4.53 % patient were diagnosed as the pregnancy with intrauterine fetal demise and delivered vaginally. The commonest thyroid disorder found in pregnancy is hypothyroidism and it adversely affects the maternal and fetal health in the form of infertility, early pregnancy loss, PIH, anemia, IUGR, PROM, preterm labor, neonatal and maternal morbidity and mortality. If thyroid disorders are appropriately detected and treated either before or in early pregnancy, the adverse materno-fetal outcome can be prevented. Hence we recommend that thyroid screening should be made universal for all antenatal patients.

Introduction

Procreation is a fundamental evolutionary process necessary to sustain life and spatiotemporally regulated endocrine, cellular and molecular events. Before ovarian follicles are expelled, oocyte maturation demands a favorable endocrine environment, including normal level of thyroid hormones. The major factors that establish uterine receptivity for implantation and further embryo development are progesterone, estrogens and the immunological system.

Thyroid disease is the second most common cause of endocrine dysfunction in the women of child bearing age after diabetes. Thyroid disease is known to affect many aspects of pregnancy and postpartum health, as well as the health of the baby. Thyroid disease is a disorder that results when the thyroid gland produces more or less thyroid hormone than the body needs. Too much thyroid hormone is called hyperthyroidism and can cause many of the body's functions to speed up. Too little thyroid hormone is

called hypothyroidism, in which many of the body's functions slow down. Subclinical hypothyroidism occurs when thyrotropin (TSH) levels are elevated but thyroxine (T4) and tri-iodothyronine (T3) levels are normal.

Materials and Methods

This study was conducted at Umaid hospital 'A Regional Institute of Maternal and Child Health' associated with Dr. S. N. Medical College, Jodhpur, India. The study found 100 patients who were admitted in our hospital from July 2009 to June 2010 as pregnancy with thyroid disorder either already diagnosed or diagnosed when suspected. Patients were observed for obstetric and clinical history, investigations, ante-partum complications, mode of delivery, postpartum complications, perinatal outcome and treatment.

Observations

Total number of patients who were admitted in labor room with pregnancy (from July 2009 to June 2010) 20454, out of these 7.82% aborted in the form of complete & incomplete abortion, missed abortion. 1.70% patient delivered before the completion of 37 weeks i.e. preterm and 4.53% patient were diagnosed as the pregnancy with intrauterine fetal demise and delivered vaginally. These entire figures show that 14.05% patient went to home without a successful outcome of pregnancy.

Thyroid disorders are among the common endocrine problems in pregnant women. It is now well established that not only overt, but subclinical thyroid dysfunction also has adverse effects on maternal and fetal outcome. There are few data from India about the prevalence of thyroid dysfunction in pregnancy. With this back ground, this study aims to find prevalence of thyroid dysfunction in pregnancy and its impact on obstetric outcome and need for universal screening of pregnant women for thyroid diseases.

This study was conducted at Umaid hospital "a Regional institute of Maternal and Child health, Department of Obstetrics and Gynecology, associated with Dr. S. N. Medical College, Jodhpur Rajasthan.

Number of patients having pregnancy with thyroid disease during this one year period was 100 i.e. 0.488% of total admission. In our study No. of patients with hypothyroidism were very high as compared to those with hyperthyroidism (94% and 5% respectively). A single case of subclinical hypothyroidism was also diagnosed during our study. Similar results were found in study of Abalovich *et al.* (2007), they suggested that thyroid disorders are the second most common endocrinological disorder found in pregnancy second only to diabetes mellitus. They found that overt hypothyroidism is estimated to occur in 0.3–0.5% of pregnancies. Subclinical hypothyroidism appears to occur in 2–3%, and hyperthyroidism was found in 0.1–0.4%.

In our study hypothyroidism was found in 0.459% of total No. of pregnant patients admitted in Umaid hospital. Similar results were found in study of Klein *et al.* (1991) they found that Hypothyroidism is common in pregnancy with an estimated prevalence of 2–3% and 0.3–0.5% for subclinical and overt hypothyroidism respectively.

In our study the number of patients with subclinical hypothyroidism and hyperthyroidism are less as compared to those found in literature. This difference could be explained by the lack of awareness, attendance in antenatal clinic and routine

antenatal screening for thyroid dysfunction and also because this study included only those patients who were already diagnosed with thyroid disorders.

In our study the incidence of thyroid disorder in pregnancy was more common in booked & urban cases as compared to unbooked & rural cases. This is due to more antenatal booking and better awareness in urban patients.

In our study the prevalence of thyroid disorders was more common in the younger (20–25 year) and primigravadae female (51% and 32% respectively). In consistence to our study similar results were also found in study done by Patowary *et al.* during 1998. According to them the prevalence of goiter in Kamalpur district of Gauhati among 3990 population, was 37.3% in the age group of 13–18 years.

Our study suggested that prevalence of previous pregnancy loss is more common in patients of pregnancy with thyroid disorder. In our study incidence of single pregnancy loss was 18%, incidence of two and more than two pregnancy loss was 12% and 8% respectively. Rama Chandra Rao *et al.* (2008) - in their study found that hypothyroidism was found to be causative factor for abortion in seven women with first trimester recurrent pregnancy loss in Indian population. Vinita *et al.* (2003) found hypothyroidism in (1.44%) women with recurrent pregnancy loss in Indian population.

The prevalence of hypothyroidism in our study was highest (94%) as compared to other thyroid disorder. In this study the overall incidence of thyroid disorder was low (0.459%) as compared to other studies. Klein *et al.* (1991) - found that hypothyroidism is common in pregnancy with an estimated prevalence of 2–3%. This difference is due to lack of routine antenatal screening for thyroid disorders and study was done only on already diagnosed patients.

The incidence of cesarean section was high (61%) as compared to vaginal delivery (28%) in this study. The indication for cesarean section was pregnancy with BOH, PIH with IUGR and PIH with previous cesarean section (29.50%, 21.31% and 22.95% respectively). The majority of cesarean sections were done for pregnancy with bad obstetrics history and pregnancy with IUGR. This indicates that thyroid disorders directly influence the maternal and fetal health. Hence our study shows that thyroid disorders are associated with pregnancy loss, PIH and IUGR. All these complication adversely affects the perinatal outcome.

The prevalence of anemia in our study was 60%. Anemia is leading risk factor that is directly associated with maternal morbidity and mortality. In consistence to our study similar results were found in study of Fein and Rivlin (1975) they suggested that nutritional deficiencies are known to develop in subclinical hypothyroidism, the most recognized one is iron deficiency. The resulting anemia can be in the form of normochromic, normocytic, hypochromic, microcytic, macrocytic, or megaloblastic anemia. Anemia is estimated to affect up to 60% of patients with hypothyroidism and is not related to severity or duration of thyroid insufficiency. In India, anemia is responsible for 17% of maternal deaths and case fatality rate of pregnancy anemia approximates 6–17%.

In our study 78% of patients with thyroid disorder delivered at term, 20% patients delivered preterm and 2% aborted before age of viability.

Table.1

Total patient admitted in labor room with pregnancy	20454	%
Full term	11703	57.21%
Pre term	348	1.70%
IUD VAG	927	4.53%
LSCS	5876	28.72%
E&C for incomplete & complete abortion, missed abortion	1600	7.82%
Total patients of thyroid disorders	100	0.488%
Hypothyroidism	94	0.459%
Hyperthyroidism	05	0.024%
Subclinical hypothyroidism	01	0.0048%

Table.2 Distribution according to booked, unbooked, rural and urban

	Number	%
Booked	87	87%
Unbooked	13	13%
Rural	31	31%
Urban	69	69%

Table.3 Distribution according to age

Age	Number	%
20–25 year	51	51%
26–30 year	32	32%
31–35 year	14	14%
>35 year	03	03%

Table.4 Distribution according to gravid

Gravida	Number	%
Primi gravida	32	32%
Second gravida	26	26%
Third gravida	19	19%
Four gravida or >	23	23%

Table.5 Distribution according to thyroid disorder

Type of disorder	Number	%
Hypothyriod	94	94%
Hyperthyroid	05	05%
Subclinical hypothyroid	01	01%

Table.6 Distribution according to mode of delivery

Mode of delivery		Number	%
Full term vaginal delivery		28	28%
Preterm vaginal delivery		8	8%
IUFD vaginal delivery		01	01%
Caeserian section	Total LSCS	61	61%
	Full term LSCS	50	50%
	Preterm LSCS	11	11%
Abortion		02	02%

Table.7 Distribution according indication of cesarean section

Indication	Number	%
Pregnancy with BOH	18	29.50%
PIH with pre caesarian section	14	22.95%
PIH with IUGR	13	21.31%
Non progress of labor	11	18.03%
Foetal distress	05	8.19%

Table.8 Distribution according to Hb concentration and type of disorder

Hb Concentration	Number of patient		%	
	Hypo	Hyper	Hypo	Hyper
>11 GM%	38	02	38%	02%
7.0–10.9 GM%	55	03	57.89%	60%
4.0–6.9 GM%	02	00	2.10%	00%
< 4 GM%	00	00	00%	00%

Table.9 Distribution according to pregnancy outcome

Gestational age	Number	%
Term	78	78%
Preterm (<37 wks)	20	20%
Abortion (< 20 wks)	02	02%

Table.10 Distribution according to foetal outcome

Total live birth	98	%
Live healthy baby	68	69.38%
IUGR baby	09	9.18%
Low birth baby	13	13.26%
Intrauterine fetal demise	01	1.02%
Abortion	02	2.04%
Neonatal morbidity	14	14.28%
Neonatal mortality	07	7.14%

Table.11 Distribution according to blood pressure and thyroid disorder

Blood Pressure (systolic / diastolic)	Number of Patient		%	
	Hypo	Hyper	Hypo	Hyper
110–130 /90mmhg	67	03	70.52%	60%
130–150 / > 90 mmhg	19	01	20%	20%
> (150/110) mmhg	09	01	9.47%	20%

Table.12 Distribution according to antepartum & postparutm complication

Complication	Number	%
APH	02	2%
PPH	01	1%
IUGR	09	9.18%
Oligohydriomnias	03	3%
Polyhydriomnias	02	2%
PIH	30	30%
Anemia	60	60%
Neonatal mortality	07	7.14%
Maternal mortality	01	01%

Table.13 Distribution according to previous history of infertility and diabetes

Type of disorder	Infertility	Diabetes	Others
Hypothyroidism	34	02	1RHD 1 Facial palsy 1case of migraine
Hyperthyroidism	02	00	

An article in the Journal of Clinical Endocrinology and Metabolism, August 1997 states, "the risk of miscarriage is twice as high in women who have antithyroid antibodies than in those who do not…" and Journal of Obstetrics and Gynecology 1997 Volume 90:364-369, states "the risk of miscarriage is higher when a woman is positive for antithyroid microsomal antibody. Roberto Negro *et al.* (2005) - found that euthyroid pregnant women who are positive for TPOAb develop impaired thyroid function, which is associated with an increased risk of miscarriage and premature deliveries. Substitutive treatment with LT4 is able to lower the chance of miscarriage and premature delivery.

Our study also suggest that there is significant prevalence of IUGR, low birth weight, neonatal morbidity and mortality in patients of pregnancy with thyroid disorder (9.18%, 13.26%, 14.28% and 7.14% respectively). Our study shows that there is increased association of PIH and anemia in patients of pregnancy with thyroid disease. These two complications are the major risk factor for development of IUGR, low birth weight babies and prematurity in affected patients. In our study 30% of total patients of pregnancy with thyroid disorder were hypertensive, of these 10% had severe

hypertension. Maternal and perinatal morbidity increases in women with gestational hypertension. In study of Gofton *et al.* (2001) induction of labor and cesarean section in women with gestational hypertension were almost double as those in the normotensive. Similar results found in study of Hauth *et al.* (2000) – who observed 4302 women to or beyond 20 weeks' gestation, of which 1073 (24.9%) developed mild or severe pregnancy-associated hypertension or preeclampsia. 116 women of the 1073 with hypertension (10.8%) and 336 of the 3229 without hypertension (10.4%) were delivered before 37 weeks' gestation.

In our study common complications occurring in patients of pregnancy with thyroid disorders were anemia, PIH, IUGR, LBW, neonatal morbidity and mortality (60%, 30%, 9.18%, 13.26%, and 7.14% respectively). There was single case of maternal mortality in the study group. (The patient had sudden cardiac arrest on day 5th of cesarean section). All these complication made pregnancy a high risk in those who had thyroid disorder. 40% of the patients in the study group had a hospital stay of seven or more days, suggesting increased maternal morbidity. The present study also suggests that there is more prevalence of infertility in hypothyroid patients.

References

Abalovich, M., Amino, N., Barbour, L.A., Cobin, R.H., De Groot, L.J., Glinoer D, Mandel SJ, Stagnaro-Green A J Clin Endocrinol Metab. 2007 Aug;92(8 Suppl):S1-47. Management of thyroid dysfunction during pregnancy and postpartum: an Endocrine Society Clinical Practice Guideline. Endocrinology Division, Durand Hospital, Buenos Aires, Argentina.

Fein, H.G., Rivlin, R.S. 1975. Anemia in thyroid disease. The Medical Clinics of North America, Vol. 59. W.B. Saunders Co., Philipines.

Gofton, E.N., Capewell, V., Natale, R., Gratton, R.J. 2001. Obstetrical intervention rates and maternal and neonatal outcomes of women with gestational hypertension. *Am. J. Obstet. Gynecol.*, 185(4): 798–803.

Hauth, J.C., Ewell, M.G., Levine, R.J., Esterlitz, J.R., Sibai, B., Curet, L.B., Catalano, P.M., Morris, C.D. 2000. Pregnancy outcomes in healthy nulliparas who developed hypertension. Calcium for preeclampsia prevention study group. *Obstet. Gynecol.*, 95(1): 24–8.

Klein, R.Z., Haddow, J.E., Faix, J.D. *et al.* 1991. Prevalence of thyroid deficiency in pregnant women. *Clin. Endocrinol. (Oxf.)*, 35: 41–6.

Patowary, S., Patowary, A.C., Sarma, E.C., Goswami, V., Ahmed, C.C., Das. M.K. 1998. Endemic goitre: A newly emerged health problem. *Indian J. Commun. Med.*, 13: 9–13.

Rama Chandra Rao, V., Lakshmi, A., Sadhnani, M.D. 2008. Prevalence of hypothyroidism in recurrent pregnancy loss in first trimester. *Indian J. Med. Sci.*,62(9): 357–361.

Roberto Negro, Formoso, G., Mangieri, T. *et al.* 2005. Levothyroxine treatment in euthyroid pregnant women with autoimmune thyroid disease: Effects on obstetrical complications. *J. Clin. Endocrinol. Metab.*, doi:10.1210/jc.2005-1603.

Vinita, D., Anjoo, A., Premlata, Y., Agrawal, C.G. 2003. Endocrinologic factor and recurrent pregnancy loss in Indian population. *JOGI*, 53 Pp.