Prevalence and complications of Hypothyroidism during pregnancy in western Nepal

Upadhyaya TL,[1*] KC A,[2] PaudelS[3]

[1]Dept of Internal Medicine, Gandaki Medical College and Diabetes thyroid and Endocrinology care center, Pokhara, Nepal
[2]Dept of Obstetrics and Gynaecology ,Gandaki Medical College, Pokhara, Nepal, [3]Staff Nurse, Diabetes thyroid and Endocrinology care center, Pokhara, Nepal

ABSTRACT

Background: This study was designed to know the prevalence of hypothyroidism during pregnancy in western part of Nepal and its potential complications.

Methods: One Hundred seven pregnant cases from Gandaki Medical college teaching hospital and Diabetes thyroid and Endocrinology care center, two of the tertiary care centers in Pokhara were enrolled in the study from the year 2011 January to 2012 December. Detailed history and physical examination was done.Thyroid Function test (FT3, FT4 and TSH) were performed after the confirmation of pregnancy. Patients were followed up during entire pregnancy.Seven patients dropped out from the study.

Results: Out of 107 patients 56 patients had TSH below 6 mIU/L,31 patients had TSH between 6mIU/L - 10 mIU/L and 13 patients had TSH more than 10 mIU/L.Seven patients dropped out from the study.There was 1 miscarriage, 1 still birth from hypothyroid mother and 11 hypothyroid and subclinical hypothyroid mothers had preterm delivery.

Conclusion: Prevalence of overt hypothyroidism is around 13% and subclinical hypothyroidism is around 31% in pregnant ladies in western Nepal.Also complications like stillbirth should be prevented by detecting and treating hypothyroidism early. So we recommend all patients with pregnancy to perform thyroid function test at the start of pregnancy.

Keywords: Complications;hypothyroidism;pregnancy

***Corresponding Author:**
Dr T.L. Upadhyaya, MD,
Associate Professor, Dept. of Medicine,
Gandaki Medical College Teaching Hospital,
Pokhara,Nepal
Email: tirtha77@hotmail.com

Citation
Upadhyaya TL, KC A, Paudel S. Prevalence and complications of Hypothyroidism during pregnancy in western Nepal. Nepal Journal of Medical sciences 2014;3(1):48-50.

Background:

Thyroid disorders are commonly encountered during pregnancy.Many studies have shown that not only overt but subclinical hypothyroidism may also have adverse effect in fetal and maternal outcome. If the iodine deficiency is not severe in utero,infants of such hypothyroid mothers appear healthy. Maternal hypothyroidism during pregnancy raises the risk of insufficient placental transfer of maternal thyroid hormone to the developing fetus so may have long lasting neuropsychological effects [1]. Fetal thyroxin is almost obtained from maternal sources in first trimester of pregnancy as fetal thyroid gland becomes functional in the second trimester of gestation.

This study was designed to know the prevalence of

hypothyroidism and its complications during pregnancy in western part of Nepal,one of the hilly region and iodine deficient area where the prevalence of thyroid disorder is relatively high.

Methods:

This is a hospital based observational study.Age below 40 years and there was no cast,geography of origin and ethnicity consideration. One hundred seven pregnant cases from Gandaki Medical college teaching hospital and Diabetes thyroid and Endocrinology care center,two of the tertiary care centers in Pokhara were enrolled in the study from the year 2011 January to 2012 December. Detailed history and physical examination was done.Thyroid Function test of serum free triiodthyronine (FT3), free thyroxine (FT4) and thyroid stimulating hormones (TSH) were performed by Enzyme-linked immunosorbent assay(ELISA) radioimmunoassay (Ranbaxy Kit, India).Data was collected and analyzed by SPSS software.Patients were followed up during entire period of pregnancy . Seven patients dropped out from the study and were not included in our study.

Results:

Out of 107 patients 56 patients had TSH below 6 mIU/L,31 patients had TSH between 6mIU/L - 10 mIU/L and 13 patients had TSH more than 10 mIU/L.Mean age of the patients was 20±3.6 years.There were 7 dropouts from the study and were not included in our study.This shows that the Prevalence of overt hypothyroidism is around 13% and subclinical hypothyroidism around 31% in pregnant ladies in western Nepal.There was one miscarriage, one still birth from hypothyroid mother and 5 preterm deliveries from overt hypothyroidism and 6 from subclinical hypothyroidism.

Discussion:

Fetal thyroxin is almost obtained from maternal sources in first trimester of pregnancyas fetal thyroid gland becomes functional in the second trimester of gestation. Thyroxin is essential for fetal neurodevelopment, maternal delivery of thyroxin to the fetus is essential early in gestation.[2]In pregnancy, iodide is lost through urine so the feto-placental unit contributes to a state of relative iodine deficiency. Thus, pregnant ladies need additional iodine intake. A daily iodine intake of 250 µg is recommended in pregnancy. Some of the complications of hypothyroidism include decreased IQ[1,3] ,fetal death and miscarriage[4,5] ,visual motor deficiency in the offsprings,[6] preterm delivery,[7,8]and post-partum thyroidits.[9]

Thyroid antibody test is warranted in hypothyroid patients, but we did not perform antibody test due to the lack of resources in our study. A positive thyroid antibody test warrants a treatment in lower TSH level too. Studies have reported adverse perinatal outcomes,maternal complications and Caesarian section among women with subclinical hypothyroidism,so detecting subclinical hypothyroidism in pregnancy is very important.[10]

Complications of hypothyroidism depend on the severity of hypothyroidism, on how appropriately and early the treatment will be initiated, on other obstetrical and extragenital pathologies associated with the present pregnancy. The appropriate, early administered treatment and maintenance of a normal level of thyroid hormones minimize the risk of maternal and fetal complications and make it possible that the pregnancy may be carried to term without severe complications. Women with previous pregnancy losses probably should be treated if their TSH level is around upper normal or with a positive antibody tests. As there is increased placental uptake, greater blood volume, and a higher thyroid binding globulin levels during pregnancy,there is around 30% increased need for thyroid hormone. Those with subclinical and high normal level of TSH at the beginning of pregnancy may not be able to meet these needs and may show signs of thyroid insufficiency during pregnancy. Study done by Negro R et al shows that the risk of miscarriage increases by 15% for each 1 mIU/L of TSH elevation.[11]

Screening of thyroid disorders should be done with TSH, ft3 and ft4 especially in high risk women like those with previous history of hypo/hyperthyroidism or thyroid surgery, postpartum thyroiditis, family history of thyroiditis, goiter, thyroid autoantibodies, signs and symptoms and biochemical markers suggestive of thyroid disease,type-1 diabetes, other autoimmune disorders, infertility, previous head and neck irradiation, history of miscarriage or preterm delivery.[12]

Simply signs and symptoms fail to detect thyroid diseases. So universal screening for thyroid disorder during pregnancy is recommended but cost effectiveness may be a problem in poor countries like ours. In our study complications may be due to unawareness of the patients, inappropriate follow ups and negligence in treatment where thyroid function was not kept under tight control. We think these complications are definitely higher than euthyroid people and general populations but because of lack of resourse we could not do further comparative studies.

Our study shows that in the hilly countries like ours, thyroid function during pregnancy should be a routine test.There

are limitations of our study. Sample size is not adequate, we have not considered about the cast, ethnicity and geographic origin as people from mountains are more prone to thyroid disorders. We also did not perform antibody test due to cost effectiveness.

Conclusion:

Prevalence of overt hypothyroidism is around 13% and subclinical hypothyroidism is around 31% in pregnant ladies in western Nepal.Complications like stillbirth, preterm delivery and miscarriage should be prevented by detecting and treating hypothyroidism early. So we recommend all patients with pregnancy to perform thyroid function test at the start of pregnancy.

References:

1. Haddow JE,Palomaki GE,Allan WC et al .Maternal thyroid deficiency during pregnany and subsequent neuropsychological development of the child. N Eng J Med 1999;341:549-55 http://dx.doi.org/10.1056/NEJM199908193410801

2. Glinoer D.Thyroid disease during pregnancy in Werner and Ingbar's.9th ed.philadelphia:lippincot Williams and Wilkins:2004

3. Pop VJ ,Kuijpens JL,Van Baar AL et al.low maternal free thyroxine concentrations during early pregnancy are associated with impaired psychomotor development in infancy.ClinEndocrinol 1999;50:149-55 http://dx.doi.org/10.1046/j.1365-2265.1999.00639.x

4. Stagnaro-Green A ,Roman SH,Cobin RH et al,Detection of at risk pregnancy by means of highly sensitive assays for thyroid autoantibodies.JAMA 1990:264:1422-5 http://dx.doi.org/10.1001/jama.1990.03450110068029

5. Allan WC,Haddow JE,Palomaki GE et al.Maternal thyroid deficiency and pregnancy complications:implication for population screening.J Med Screen 2000;7:127-30 http://dx.doi.org/10.1136/jms.7.3.127

6. Zoeller RT,Rovert J.Timing of thyroid hormone action in the developing brain:clinical observations and experimental findings.J Neuroendocrinol 2004;16:809-16 http://dx.doi.org/10.1111/j.1365-2826.2004.01243.x

7. Stagnaro-Green A,Chen X,Bodgen JD et al.Thyroid and pregnancy: a novel risk factor for very preterm delivery. Thyroid 2005;15:351-57 http://dx.doi.org/10.1089/thy.2005.15.351

8. Casey BM,Dashe JS,Wells CE et al.Subclinical Hypothyroidism and clinical outcome.obstretGynecol 2005;105:239-45

9. Nicholson WK,Robinson KA,Smallridge RC et al.prevalance of postpartum thyroid dysfunction: A quantitave review.Thyroid 2006;16:573-82 http://dx.doi.org/10.1089/thy.2006.16.573

10. Sahu MT,Das V,Mittal S et al.Overt and subclinical thyroid dysfunction among Indian pregnant women and its effect in maternal and fetal outcome.Arch GynacolObstet 2010;281:215-20 http://dx.doi.org/10.1007/s00404-009-1105-1

11. Negro R,Schwartz A,Gismondi R et al.Increased pregnancy loss rate in thyroid antibody negative women with TSH levels between 2.5 and 5 in the first trimester of pregnancy.J clin Endocrinol Metab 2010;95:E44-48 http://dx.doi.org/10.1210/jc.2010-0340

12. Banerjee S.Thyroid disorders in pregnancy.J Assoc Physicians of India 2011;59suppl:32-4