

CASE REPORT:**Maternal and perinatal outcomes of hyperthyroidism in pregnancy at Dr. Cipto Mangunkusumo Hospital, Jakarta, period of January 2015 - December 2016****Fita Maulina*, M Adya F Dilmy, Ali Sungkar**Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Indonesia,
Dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia**ABSTRACT****Objectives:** To report maternal and perinatal outcomes of hyperthyroidism in pregnancy.**Case Report:** There were 3622 cases of delivering pregnant women during the period of the study. From this number, the prevalence of pregnant women with hyperthyroid was 0.2 %. We reported 9 cases of hyperthyroid in pregnancy. The number of pregnancy complication and outcome on pregnant women with hyperthyroidism were preterm labor (44%) and preeclampsia (22%), both were found in group of mother who did taking antihyperthyroid therapy. In those who did not take antihyperthyroid therapy 11% had spontaneous abortion and 11% had preterm delivery. Fetal complications were intrauterine growth restriction (11%) and intrauterine fetal death (23%), both of these complication were on the group who did not take antihyperthyroid. On the contrary, 44% babies were born with normal birthweight in group who took antihyperthyroid.**Conclusion:** There were differences noted between the group that took adequate treatment and the group that did not take antihyperthyroid. The incidence of intrauterine growth restriction and intrauterine fetal death were high in group that did not took antihyperthyroid therapy but the incidence of preterm delivery as the maternal complication was high in group that did take the antihyperthyroid therapy.**Keywords:** Hyperthyroid in pregnancy; maternal outcome; perinatal outcome**ABSTRAK****Tujuan:** Untuk melaporkan kondisi ibu dan perinatal pada hipertiroidisme dalam kehamilan.**Laporan Kasus:** Ada 3622 kasus ibu hamil yang melahirkan selama masa penelitian. Dari angka tersebut prevalensi ibu hamil dengan hipertiroid pada periode penelitian ini sebesar 0,2%. Kami melaporkan 9 kasus hipertiroid dalam kehamilan. Jumlah komplikasi kehamilan dan hasil akhir pada wanita hipertiroid adalah persalinan prematur (44%), preeklamsia (22%), keduanya berasal dari kelompok ibu yang melakukan terapi antihipertiroid, sebaliknya yang tidak menjalani terapi antihipertiroid sebanyak 11% mengalami abortus spontan dan 11% kelahiran prematur. Komplikasi janin adalah hambatan pertumbuhan intrauterin (11%) dan kematian janin intrauterin (23%). Kedua komplikasi tersebut terjadi pada kelompok yang tidak menggunakan antihipertiroid. Sebanyak 44% bayi lahir dengan berat badan normal pada kelompok yang mengonsumsi antihipertiroid.**Simpulan:** Ada perbedaan yang dicatat antara kelompok yang mendapat pengobatan adekuat dengan kelompok yang tidak menggunakan antihipertiroid. Kejadian hambatan pertumbuhan intrauterin dan kematian janin intrauterin tinggi pada kelompok yang tidak menggunakan terapi antihipertiroid tetapi kejadian persalinan prematur karena komplikasi maternal yang tinggi terjadi pada kelompok yang mendapat terapi antihipertiroid.**Kata kunci:** Hipertiroid pada kehamilan; kondisi ibu; kondisi perinatal***Correspondence:** Fita Maulina, Department of Obstetrics and Gynecology Faculty of Medicine University of Indonesia, General Hospital Cipto Mangunkusumo, Jakarta, Indonesia. Email: maulinafieta@gmail.com

INTRODUCTION

Clinical hyperthyroidism complicates 0.1%–0.3% of pregnancies.¹ The diagnosis of hyperthyroidism may be difficult during pregnancy because some of the symptoms can occur physiologically during this time.^{1,4} Uncontrolled disease is associated with an increased risk of perinatal complications such as intrauterine growth restriction, premature rupture of membranes, stillbirth, pre-eclampsia, and spontaneous abortion.² The prevalence of undiagnosed hyperthyroidism in women is about 4.7/1000,⁴ and 0.2% of UK women have been previously diagnosed and treated.³ We present 9 cases of hyperthyroid in pregnancy in a general hospital with characteristic as can be seen in Table 1. All subjects had provided their consent for publication of their cases.

CASE REPORT

Case I

Mrs. QA, a G2A1 25 year-old woman with 38 weeks of gestational age (wga). The fetus was singleton with dorsosuperior transverse lie, not in labor with Hashimoto thyroiditis on therapy and iron deficiency anemia (Hb 9.5 gr/dl). Thyroid disease was positive since the first pregnancy. She consumed PTU 3x/day, ceased since 2 weeks before admission. She had no clinical sign of hyperthyroid. The BMI was 27.5 (N), laboratory examinations revealed FT4 1.1 (N) and TSHs 0.7 (N). She had elective cesarean section (CS) with no pathological findings.

Case II

Mrs. M was a G3P2 of 28 years-old with inevitable abortion on 20 wga. She had twin pregnancy, both lived, and she had monochorionic monoamnion with hyperthyroid not on therapy as well as chronic hypertension with controlled blood pressure. Her BMI was 28, laboratory examinations findings FT4/TSHs: 2,39/0,01 (H). She received expectant management, and with pathology of spontaneous abortion.



Figure 1. Babies born in Case II

Case III

Mrs. DR was a G4P3 of 39 years-old with no reassuring fetal status on 30 wga. The fetus was singleton, lived, with head presentation. She had PPROM for 6 hours, severe oligohydramnios, hyperthyroid on therapy since the previous three years, for which she received medication at another hospital with PTU 1 x 1 tab for 2 years, six months thereafter she received thyrozol 1 x 1 tab, and six months later, which was 6 months before admission, she received thyrozol 1x1/2 tablet. At about the same time she was checked for TSH and FT4, revealing TSH of 0.2 and FT4 of 1.4 with BMI of 27.6. Laboratory examination of the fetus revealed cord BGA : pH 7.209/pCO₂ 41.1/ pO₂ 21.1/O₂ saturation 30.3/BE (-10.1)/HCO₃ 15.3/Total CO₂ 17.8. Analysis of non-reassuring fetal status revealed fetal acidemia, and the management she received was emergency cesarean section and tubectomy pomeroy with pathology of preterm labor, low birth weight with congenital anomaly of oesophageal atresia and anal atresia.



Figure 2. The baby born in Case III

Case IV

Mrs. EP, 30 years-old who was G3P0A2, had intrauterine infection on preterm labor on 26 wga. The fetus was singleton, lived with breech presentation. She had PPROM for 1 week, oligohydramnios (AFI 1.0), severe persistent asthma on attack, hyperthyroid on therapy, and chronic hypertension. Her BMI was 22.6 and laboratory results showed TSH of 0.010 and free T4 of 2.690. She had hyperthyroid, took tirozol 2 x per day (20 mg for morning dose and 10 mg for evening dose). She had vaginal delivery and the pathology was PPROM with normal birthweight.

Table 1. Hyperthyroid in pregnancy in a general hospital

No	Age	Obstetric stat	Diagnosis	Antithyroid Admission	Mode of delivery	Complication during Pregnancy	Baby outcome
1	25	G2A1 38 wga	Hashimoto thyroiditis	PTU 3x daily	C- section		3600 gr
2	28	G3P2 20 wga	Hyperthyroid	-		Spontaneous Abortion	300 gr and 350 gr
3	39	G4P3 30 wga	Hyperthyroid	Thyrozol 1x20mg	C- section	PPROM	1075 gr low birth weight
4	30	G3P0A2 26 wga	Hyperthyroid	Thyrozol 2x 20 mg	Vaginal delivery	PPROM	1010 gr low birth weight
5	24	G1 38 wga	Hyperthyroid	PTU 1x daily	Vaginal delivery	Preeclampsia	3000 gr
6	29	G2P1 28 wga	Grave disease	-	C- section	PPROM	1 st Baby 1000 gr 2 nd baby IUFD
7	37	G6P5 36 wga	Hyperthyroid	PTU 3x daily	Vaginal Delivery	Preeclampsia	3000 gram
8	26	G1 35 wga	Hyperthyroid	PTU 1x 100 mg	C- section	PROM	2000 gram
9	28	G2P1 25 wga	Grave disease	-	Vaginal delivery	Preterm Delivery	730 gr IUFD

Case V

Mrs. SM, aged 24 years, a G1 with 38 wga, had singleton living fetus with head presentation. She had diminished amniotic fluid (AFI 6.71), favourable cervix (PS 6), not in labor, preeclampsia with severe feature, and hyperthyroid on therapy. She was diagnosed as having hyperthyroid since 2 years ago, for which she had received medication without knowing the name of the drug. During pregnancy, she received PTU 1 x 1 tab and routinely checked for hyperthyroid in another hospital. She had BMI of 24.2, laboratory results of free T4 of 1.920 and TSH 0.01. She had vaginal delivery and the pathology was preeclampsia

Case VI

Mrs. L, a G2P1 aged 29 years with 28 wga. She had twin pregnancy, head-head presentation, TTTS Quintero V (IUFD of second baby). She had oligohydramnios (AFI 2), periventricular leukomalacia, post lung maturation, Grave's disease, clinically euthyroid, and a previous cesarean section. She had hyperthyroid since 2013, controlled with PTU 1 x 100 mg per oral. Her BMI was 23.1, and laboratory examinations revealed FT4 1.06 and TSH 1.18. She had emergency c- section with pathology of IUFD and IUGR,

Case VII

Mrs. NK, a G6P5 of 37 years old, had preeclampsia with severe features on 38 weeks of gestational age. The fetus was living singleton with head presentation, not in

labor. She had hyperthyroid on therapy, diagnosed since two years previously, treated with propranolol 1 x 10 mg and PTU 3 x 1 tab. At 8 month, she stopped the medication because she felt bored. During pregnancy she received PTU of 1 x 1 tab with BMI of 23.1. Laboratory examinations showed TSH <0.05 and FT4 3.1. She delivered with vaginal delivery and the pathology was preeclampsia. The baby was born with normal weight of 3000 grams.

Case VIII

Mrs. M, a G1 of 26 years old, had PROM on 35 weeks of gestational age. She had singleton living fetus with head presentation, small for gestational age. The fetus was suspected of IUGR. She had oligohydramnios (AFI 4), hyperthyroid on therapy, and microcytic hypochromic anaemia due to Iron deficiency (Hb: 9.7, Ferritin: 10). The mother had the history of hyperthyroid since 2013 and routinely visited a certain hospital and had PTU 3 x 200 mg and dropped out from the therapy until one month before admission. She then continued her examination to another hospital and had PTU with lower dosage of 1 x 100 mg. The laboratory examination results showed TSH/ FT4 of 0.04/ 0.97. She had vaginal delivery with PROM and the baby had IUGR.

Case IX

Mrs. R, a G2P1 aged 28 years-old of 25 wga. The fetus was singleton with IUFD and fetal hydrops. She had hyperthyroid due to graves disease. She had anemia microcytic hypochromic due to iron deficiency (Hb 8.2)

and since 2006 had been diagnosed with hyperthyroid by an internist from another town. She routinely consumed Tirozol 1 x 1, felt palpitation, tremor, hyperhydrosis, difficult of sleeping at that time, with light sensitivity and blurred vision. She stopped her medicine by herself in 2009 and did not go to check for her hyperthyroid condition because she felt no symptom at all. In 2013 she got routine examination at a hospital and continued her Tyrozol 1 x 1 due to high thyroid function test. Until she got her first pregnancy in 2015, she stopped the medicine until admission. At the admission, she did not feel any symptom about her illness except her mild palpitation and exophthalmos. She just obtained her PTU since 1 day before admission from another hospital. Her BMI was 26, laboratory examinations showed TSH/ FT4: 0.03/ 13. She had vaginal delivery and she gave birth to a preterm baby with IUFD.

DISCUSSION

Untreated overt hyperthyroidism are known to be associated with maternal and fetal complications. Common fetal complications of untreated maternal thyroid disease are low birth weight and a high frequency of fetal death. On the other hand, mothers with treated hypothyroidism may have an increased risk of large-for-gestational age (LGA) infants and also low-birth weight infants, infants with malformations and especially preterm delivery.⁶ Overt hyperthyroidism might be associated with an increased prevalence of preeclampsia and pregnancy-induced hypertension. [6] Hyperthyroid condition in pregnant women also will affect to the delivered baby. Increase in preterm labor incidence (11-25%), stillbirth (8-15%) and decreasing baby's birthweight.

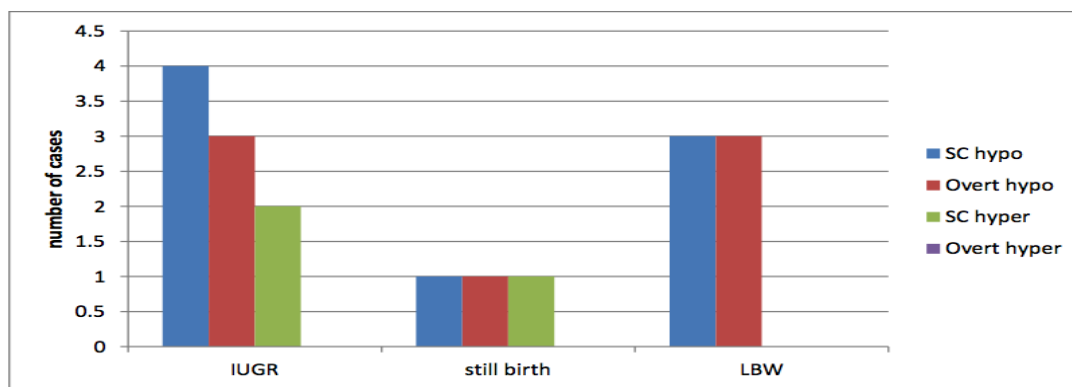


Figure 3. Incidence of fetal complication in 116 pregnant women with thyroid disorders.⁴ Notes: Subclinical hypothyroidism: High serum TSH level with normal fT4, fT3 level, Overt hypothyroidism: High serum TSH level with fT4 and fT3 less than normal range, Subclinical hyperthyroidism: Low serum TSH level with normal fT3, fT4 level. Overt hyperthyroidism: Low serum TSH level with fT3 and fT4 more than normal range.

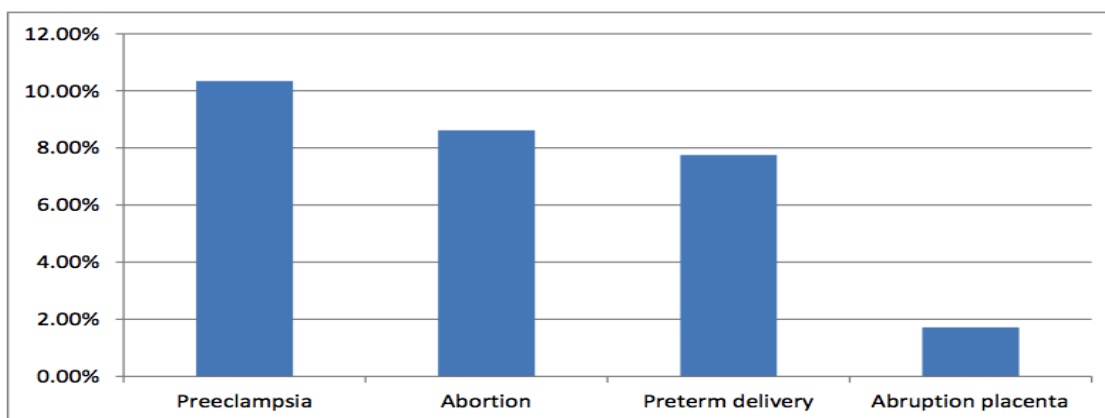


Figure 4. Incidence of maternal complication in pregnant women with thyroid disorders.⁹

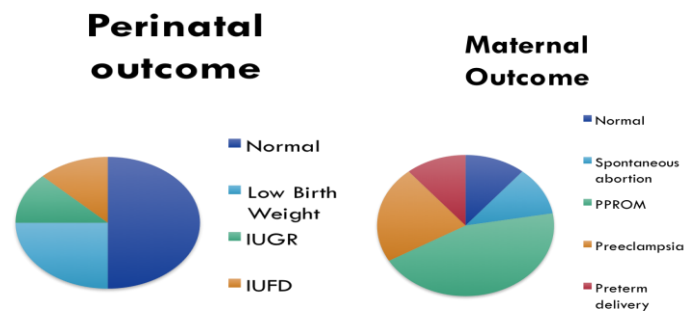


Figure 5. Outcomes of pregnancy complicated with hyperthyroidism in this case series

Changed in thyroid physiology is mainly to meet the increasing demand of maternal thyroid hormones, for the development of the foetus, mainly that of the Central Nervous System. As hCG is structurally similar to TSH, so the increase in hCG level in 1st trimester causes a transient increase in FT4 and therefore subsequent TSH suppression.⁸

The incidence of preeclampsia was also found to be significantly high in those with low TSH levels. The findings of the present study are in accordance with those of previous researchers. Other way round there are studies which have gone to show that women complicated with preeclampsia have high incidence of hypothyroidism that might correlate with the severity of preeclampsia.^{8,10}

Even though most patients in this study were treated to controlled the disease with a satisfactory response, the fetal adverse outcomes were still consider. Pregnancy complicated with hyperthyroidism even in controlled status should prompt warrant close monitoring for fetal conditions, especially growth rate and well being.^{5,11,12}

CONCLUSION

Treated maternal hyperthyroidism is not a risk factor for adverse perinatal outcome.

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