Preeclampsia-like syndrome that is associated with severe hypothyroidism in a 20-week pregnant woman

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We report a case of overt hypothyroidism that was associated with a preeclampsia-like syndrome and fetal death in a 37-year-old woman (gravidity, 7; parity, 6). Rapid and robust correction of hypothyroidism is recommended in this situation.

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Although overt hypothyroidism (elevated thyroid-stimulating hormone and decreased freeT₄ serum levels) has been reported in 0.3% of pregnancies, it carries a high risk of adverse obstetric outcomes (Table I). We reported the rare occurrence of overt hypothyroidism that was associated with hypertension, proteinuria, and intrauterine fetal death in a 37-year-old pregnant patient.

Case report

A 20-week pregnant 37-year-old woman (gravidity, 7; parity, 6), with a history of treated thyrotoxic Graves disease, was referred to this endocrine clinic for the evaluation of hypothyroidism. She stopped receiving levothyroxine therapy 2 years earlier, which had been started when hypothyroidism developed after ablation. She had been complaining of easy fatigability, sleepiness, cold intolerance and unspecified weight gain in the last year. On examination, her face was puffy; her weight was 103 kg; her pulse rate was 86 per minute, and her blood pressure was 170/120 mm Hg. Her skin was cool and dry with a yellowish discoloration. A 20-week gravid uterus was felt on abdominal examination, with no associated abdominal tenderness. Slow relaxation of deep tendon reflexes and mild lower limb edema were also noted.

Investigations revealed that her serum thyroid-stimulating hormone level was elevated at 45.9 mU/L (normal, 0.4-4.5 mU/L), and her free T₄ serum level was decreased at 3.1 pmol/L (normal, 9.0-26.0 pmol/L). We started her immediately on oral levothyroxine 200 μg daily, and the hypertension was treated with intravenous labetalol and methyldopa in the case room. Repeated investigations on the day of admission are shown in Table II.

An abdominal ultrasound examination showed a normal-sized fetus with no apparent malformations, and the placenta was unremarkable. The 24-hour urine protein was 6 g, and creatinine clearance was 126 mL/min. One week after being treated with a daily dose of 200 μg of...
oral levothyroxine, the free T₄ serum level was still low at 4.3 pmol/L. On that same day, intrauterine fetal death was documented. The pathology report showed a male fetus that weighed 321 g (between 10th and 25th percentile growth for gestational age) with no evidence of congenital malformations. There was a fresh retroplacental hematoma that involved 60% of maternal surface, decidual vasculopathy, Tenney-Parker changes, and an ischemic infarct that involved 10% to 15% of the placental parenchyma.

**Comment**

Davis et al¹ studied 14 women in 16 pregnancies with overt hypothyroidism. Seven women had preeclampsia; 5 of the women had a history of chronic hypertension. Five infants were born with weights of <2000 g; 2 infants were stillborn at 27 and 30 weeks of gestation, and the deaths were associated with abruptio placentae and preeclampsia.

Hypothyroidism can lead to vascular smooth muscle contraction in systemic and renal vessels, which leads to increased peripheral vascular resistance, diastolic hypertension, and decreased tissue perfusion. Few case reports suggested that hypothyroidism can also cause proteinuria. Ogata et al² reported a case of a 65-year-old woman with proteinuria, edema, weight gain, and renal dysfunction 6 months after she stopped her levothyroxine therapy. Renal biopsy showed focal segmental proliferative glomerulonephritis. After restarting levothyroxine therapy, her thyroid and renal functions both recovered.

Our case emphasizes a problem that is encountered with overt hypothyroidism that complicates pregnancy (ie, an expanded thyroxine pool must be replenished rapidly when depleted). Not only is the daily levothyroxine dose requirement higher in the gravid state (2.0 μg /kg body weight/day compared with 1.5 μg /kg body weight/day), but also, with urgent hypothyroid conditions, a loading dose may be required to increase serum T₄ levels rapidly. In our patient, despite 1 week of an adequate daily dose of levothyroxine, the serum T₄ level had not risen significantly. As suggested by some investigators, a loading dose that was equivalent to 3 times the daily requirement (eg, 600 μg given daily for 3 days followed then by a daily maintenance dose [200 μg]) would have allowed a more rapid return to the euthyroid state.³ This approach may have changed the outcome.

In conclusion, overt hypothyroidism in pregnancy may be associated with a preeclampsia-like syndrome that carries a high risk of adverse obstetric outcomes. Treatment of this condition requires not only the use of higher than conventional maintenance doses of levothyroxine but also a rapid loading dose that is given orally or even intravenously to achieve a normal serum T₄ levels.

**References**

