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Hypothyroidism and Pregnancy University Hospital Saint Pierre in Brussels: Clinical Case study and Literature Review

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Abstract

Pregnancy causes significant changes in the thyroid gland and its functions, which can cause hypothyroidism. We report the results of a hypothyroidism treatment and pregnancy in the hospital of Saint Pierre of Bruxels. It is a 33-year patient discovered in 2008, during the fourth pregnancy, subclinical hypothyroidism due to autoimmune Hashimoto's thyroiditis. The patient received regular monitoring for several years. This allowed us to assess the evolution of the different parameters and characteristics of this disease and also its interactions with pregnancy.

Keywords: Hypothyroidism; Pregnancy; Treatment; Prognosis

Introduction

Pregnancy causes significant changes in the thyroid gland and its functions [1]. In fact, during pregnancy, the size of the gland increases by about 10 % in non-deficient areas of iodine and 20 % to 40 % in iodine deficient regions, Production of T4 and T3 increases by about 50 % [1,3], and daily iodine needs increase significantly. The physiological changes may result in later disturbances in the conduct of the pregnancy. And iodine deficiency hypothyroidism is possible in pregnant women, even among those whose thyroid remains normal in the first quarter [2,3].

The frequency of hypothyroidism would be 10 to 20% in normal. Thyroid pregnant women with TPO and/org-positive auto-antibodies [4,5]. In these women, about 20% are at risk of developing supernormal TSH (>4 mUI/L) in the 3rd quarter in about half of them are risk developing hypothyroidism during the postpartum.

Progress the interaction between thyroid and gravido-perium have established a TSH Threshold 2.5 m UI/L as being the normal maximum limit acceptable in first trimester [1]. With implications for the diagnosis of hypothyroidism in its crude forms. Although it is accepted and shown that hypothyroidism have been shown or subclinical hypothyroidism on maternal and fetal health and on the interaction between miscarriage or premature birth in women who exhibit anti-TPO antibodies and /or positive anti tg 5.6. Through this clinical case, we wanted provide current information on the interaction of thyroid and pregnancy.

Patient and method

It is a clinical case of hypothyroidism in a pregnant supported in CHU Saint Pierre in Brussels in Belgium. We conducted a literature search to analyze the association hyperthyroidism and pregnancy through literature data.

Months	TSH (m UI/L)	Free T4 (ng/dL)	HC anti- TPO (m UI/L)	Action/Events
M0 (23/02/2008)	4.31	1.70	422	Diagnosis SCH/AITD-
M2 (14/04/2008)	4.6	1.00		>LT4: 50 µg/day Pregnancy of 19 SA
M6 (06/08/2008)	2.91	0.70		32 SA/LT4 :75 µg/day
M10	2.02	1.01	1300	Induced birth 20/10/2008 for exceeding the term
M16 (04/06/2009)	6.10	0.80	1300	LT4: 100 µg/day, Thyroid ultrasound requested
M26 (29/04/10)	1.84	0.90	1300	22 SA
M29 (15/07/10)	1.69	1.20		32 SA

M31 (04/11/2010)	1.64	1.20		Induced birth 22/09/2010 fir exceeding the term
M 43 (20/11/11)	4.32	1.20	1300	LT4/150 µg/day
M24 (18/02/10)	2.77	0.90	3400	L T4: 125 µg/day ultrasound : granular atrophy, new pregnancy of 10 SA
M45 (12/01/12)	1.89	1.10	1300	
M57 (10/01/13)	6.76	1.10	6779	Interruption of treatment while traveling, LT4: 150 µg/day
M73 (08/05/2014)	1.98	1.40	4705	
SCG: hypothyroidism subclinical. AITD: Auto-immunity thyroid disease. Free T4 : T4 libre The figure below reflects changes in TSH and T4 Free associated with the various special events.				

Table 1: Summary of monitoring the patient 2008-2014.

Clinical case: The clinical case concerns Mrs KM aged 33 years. The story of her illness dates back to 23/02/2008 at its 4t^{h} pregnancy has gestational age 19 SA and scheduled completion scheduled for 11/10/2008. It's noted in her history a first pregnancy with a normal birth at term in 2004. Her second pregnancy in 2006 ended in a miscarriage with a term vaginal delivery at the Hospital of Erasme with a daughter of 3690g on 20/03/2007. She had no medical or chirurgical individual antecedents. And no thyroid disorder entries diagnosed during the first three pregnancies. This was during the pregnancy a subclinical hypothyroidism was discovered after a blood test in February 2008, due to autoimmune thyroiditis of Hashimoto and the patient has received regular monitoring for several years. This allowed us to appreciate the evolution of the different parameters and very characteristic of this disease and also its interactions with pregnancy. Table below summarize the essential monitoring of this patient.

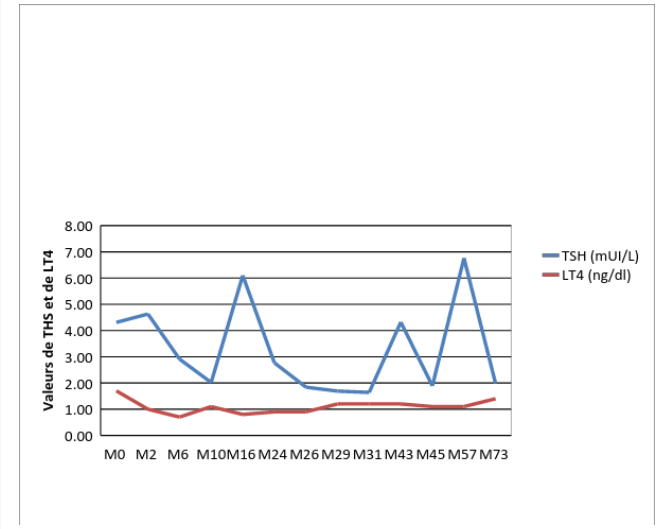

Figure 1: Growth TSH and Free T.

Discussion

This is a case of thyroid insufficiency in a context of chronic thyroid auto-immune (Hashimoto's disease) with partial atrophy of the thyroid gland, confirmed by an ultrasound of gland. While her thyroid function properly balanced by hormone replacement therapy (L-T4), interaction with an going pregnancy in 2008 led to a rise in TSH (>4m UI/L) with lowering of the free T4 (0.70 ng/dL) due to the increased need for thyroid hormonal balance. In the aftermath of childbirth, high elevation of TSH (6.10 mUI/L) results of postpartum thyroid phenomenon, a very complication in women with anti-thyroid antibodies (50% of cases). Furthermore, pregnancy 2010 shows that thyroid function, already precarious in this case, has yet degraded, as evidenced by the increase in its needs thyroid hormone, 100-150 µg/day.

From the epidemiology of Hypothyroidism: Prevalence of hypothyroidism in literature is 2-3% for subclinical hypothyroidism, 3. 3-05 for proved hypothyroidism. There are many causes of hypothyroidism in pregnant women, iodine deficiency, auto-immune thyroiditis of Hashimoto, the leading cause in countries where nutritional intake is sufficient. Other causes of hypothyroidism represent less than 1% etiology and have no major role in practice. It is the treatment with radioactive iodine, the thyroid surgery different causes of hypothyroidism of central origin, the iatrogenic hypothyroidism overdose treatment of hypothyroidism by anti-thyroid drugs.

From diagnostic: In general, 70-80% remain asymptomatic however some clinical signs of hypothyroidism can the found in non-pregnant women as asthenia, women as asthenia, weight gain, the somnolence, constipation. Other signs can make the dubious diagnosis: bradycardia, sensitivity to cold, dry skin. Thus, the diagnosis of subclinical hypothyroidism or established is essentially organic. Only thyroid tests used to confirm the diagnosis. The TSH values to in pregnant women vary according to the age of the pregnancy. It will also consider the TSH-like effect of HCG in the first trimester [6,7]. These variation of TSH during pregnancy requires use of own reference value to each trimester. Among the factors that explain the variation in results include the ethnic group, the geographical context, the study population, iodine deficiency, and the presence of TPO antibodies.

Of support: The goal of treatment is to normalize the values of THS in own limits every trimester or 0.1-2.5 mUI/L in second and third trimester, to reduce the risks to mother and fetus. It IS l-T4 or Levothyroxine known as trade name levothyrox or Levothyroxine which is the most used at a dose of 25 to 50 µg/day in a sing dose fasting morning. In a Known patient under treatment before pregnancy, as soon as pregnancy is confirmed, the dose of L-T4 should increase by 25-50%. This dose will be adjusted according to the monitored values of TSH. In subclinical hypothyroidism hypothyroidism the administration of L-T4 will be dose escalation and adapted to TSH assays are 10-12 SA, 28-32 SA, and three months after childbirth. It is thanks to this supports that the complications of hypothyroidism are preventable.

Prognosis: Obstetric complications of hypothyroidism are dominated by many miscarriages anaemia, gestational hypertension or eclampsia, retro placental hematoma, premature rupture of membranes, haemorrhage issuing with variable frequencies depending on the study. Prenatal prognosis is influenced by prematurity, low birth weight, malformation, acute fetal distress, prenatal death, and the Rating Decrease IQ.

Conclusion

Hypothyroidism during pregnancy is a common pathology. It is usually asymptomatic and its consequences on the mother and fetus is not negligible. This implies the necessity of its screening which involves assaying the TSH, Free T4, and TPO antibodies. IF the systematic screening remains a controversial issue, it is however recommended to realize in patients at high risk of hypothyroidism. It management is multidisciplinary and requires good collaboration between the obstetrician and endocrinologist.

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