CASE REPORT

1. Extraordinary Expert Professor, School of Medicine, Universidad Nacional Mayor de San Marcos, Lima, Peru. Honorary Academician, National Academy of Medicine, Lima, Peru. ORCID: 0000-0002-6513-8743

Author Participation: FGL has participated in the conception or design of the manuscript, data collection, drafting of the article, critical revision of the manuscript, final approval of the version to be published. Assumes responsibility for all aspects of the manuscript.

Financing: Self-funded

Conflict of interest: The author has no conflict of interest with the publication of this work.

Received: June 7, 2021

Accepted: August 16, 2021

Online publication:

Corresponding author:
Dr. Fausto Garmendia-Lorena
Elías Aguirre N° 141-409, Miraflores, Lima 18
981903903
garmendiafausto@gmail.com

Cite as: Garmendia-Lorena F. Decreased antithyroid antibodies during pregnancy in Hashimoto's thyroiditis. Rev Peru Gynecol Obstet. 2021;67(4). DOI: https://doi.org/10.31403/rpgo.v67i2371

Decreased antithyroid antibodies during pregnancy in the Hashimoto´s thyroiditis

Disminución de los anticuerpos antitiroideos durante el embarazo en la tiroiditis de Hashimoto

Fausto Garmendia-Lorena[1]

DOI: https://doi.org/10.31403/rpgo.v67i2371

ABSTRACT
The decrease in antithyroid antibody titer in two cases of Hashimoto's thyroiditis during pregnancy is reported. The two women, aged 37 and 32 years, respectively, diagnosed with Hashimoto's thyroiditis and hypothyroidism, were sequentially evaluated for thyroid function and blood titers of antithyroglobulin (TGAb) and antiperoxidase (TPOAb) antibodies before, during and after pregnancy. A progressive and significant drop in both antibodies was observed during pregnancy, which was not related to changes in thyroid function. After delivery there was a regrowth of antithyroid antibody titer. It is concluded that during pregnancy there is a decrease in the immune response in Hashimoto's thyroiditis.
Key words: Hashimoto's disease, Pregnancy, Antithyroid antibodies.

RESUMEN
Se comunica la disminución del título de anticuerpos antitiroideos en dos casos de tiroiditis de Hashimoto durante el embarazo. A las dos mujeres, de 37 y 32 años de edad, respectivamente, con diagnóstico de tiroiditis de Hashimoto e hipotiroidismo, se les evaluó secuencialmente la función tiroidea y los títulos en sangre de anticuerpos antitiroglobulina (Ac-TG) y antiperoxidasa (Ac-TPO), antes, durante y después del embarazo. Se observó caída progresiva y significativa de ambos anticuerpos durante el embarazo, que no guardó relación con las modificaciones de la función tiroidea. Después del parto hubo un rebrote del título de los anticuerpos antitiroideos. Se concluye que durante el embarazo se produce una disminución de la respuesta inmunitaria en la tiroiditis de Hashimoto.
Palabras clave. Enfermedad de Hashimoto, Embarazo, Anticuerpos antitiroideos.

Introduction

During pregnancy, multiple hormonal readjustments occur. The increase in chorionic gonadotropic hormone (hCG) from the first trimester of pregnancy leads to an increase in thyroid gland volume and thyroid function, due to its stimulatory effect on TSH receptors. On the other hand, the increase in estrogens causes a 100% increase in thyroxine binding globulin (TBG), which in turn increases total thyroxine (T4) and triiodothyronine (T3) and decreases TSH and normal levels of free T4 and T3[(1)].

Hashimoto's thyroiditis (HT) is the most common chronic autoimmune thyroid disease in females, usually leading to hypothyroidism. It has been described that it can also present with transient hyperthyroidism or normal thyroid function, depending on the type of circulating antibodies. In women it is diagnosed before, during and after pregnancy, both by clinical manifestations, determination of antithyroid antibodies, antiperoxidase (TPOAb) and antithyroglobulin (TGAb) and thyroid biopsy, in which chronic lymphocytic inflammation is found[(2)].

In this repot, we present two cases of HT in women, diagnosed and treated before, during gestation and after delivery, in which the influence of pregnancy on the decreasing titer of antithyroid antibodies

drew attention, which allows us to consider that the decrease of antithyroid antibodies in pregnancy is due to a modification of the general immune response[1].

Case reports

Medical records and blood determinations of microsomal antibodies (TPOAb, normal range 0-35 IU/mL), antithyroglobulin (TGAb, normal range 0-115 IU/mL), TSH (normal range 0.5-5 IUI/mL) were reviewed, total T4 (normal range 5.1-14.1 ng/dL), total T3 (normal range 60-200 ng/dL), free T4 (normal range 0.8-1.80 ng/dL) and free T3 (normal range 2.0-4.5 pg/mL) by conventional methods, before, during pregnancy and postpartum.

Case 1

RBC, a 37-year-old woman, height 1.63, weight 63 kg, body mass index (BMI) 23.7, blood pressure (BP) 110/70, menarche at age 13, catamenial regimen (CR) 3/28, date of last menstrual period (LMP) 11/08/07, diagnosed with HT and primary hypothyroidism and treated with L-thyroxine sodium 125 ug/day. Five years later she decided to have a family and was able to get pregnant through an assisted reproduction procedure. The pregnancy was normal and the delivery was by cesarean section. The newborn weighed 2,800 g, with normal neonatal TSH.

Case 2

MLS, age 32, height 1.55, weight 48 kg, BMI 20.0, BP 90/60, menarche at age 12, CR 4/30, LMP 12/10/14. She had an IUD removed with the intention of gestation. Subsequently she was diagnosed with hypothyroidism due to HT and treatment with levothyroxine sodium was started. One year later she became pregnant and had a normal gestation and delivery. The newborn weighed 1,860 g.

Results

In the RBC case, treatment with L-thyroxine sodium in increasing doses allowed normalization of TSH, T4 and T3 values. However, antithyroid antibody levels remained high until pregnancy. TPOAb of 600 and 1,231 IU/mL decreased to 286 and 207 and TGAb of 374 and 364 decreased to

Table 1. Evolution of antithyroid antibody concentrations and thyroid function tests of the RBC case.

	Prepregnancy		Pregnancy					Postpartum
			First trimester		Second trimester	Third trimester		
Date	05/05/14	23/06/14	06/08/14	06/10/14	05/11/14	02/01/15	14/02/15	23/12/15
TPOAb[1]	659	1,231	977	495	510	286	207	1,723
TGAb[2]	374	364	263	114	91	36	30.5	483
TSH	5.73	0.16	1.44	0.44	1.69	1.93	1.90	0.33
Total T3	98	124	99			137		
Total T4	6.25	13.0				10.2		
Free T3				3.1	2.3		2.1	3.4
Free T4			1.41	1.34	1.04		0.80	1.72
Rx: L-T4[3]	150.0	150.0	150	150	150	150.0	150.0	125

[1]TPOAb: microsomal antibodies; [2]TGAb: anti-thyroglobulin antibodies; [3]Rx: L-T4: treatment with levothyroxine sodium ug/day.

Table 2. Evolution of antithyroid antibody concentrations and thyroid function tests of the MLS case.

	Pregestación		Gestación				Posparto
	22/12/14	30/09/15	09//12/15	06//01/16	03/02/16	13/06/16	18/07/16
TPOAb[1]	102.5	71.7		40.4	35.5	20.2	243
TGAb[2]	2,874	1,813		1,396	1,243	518	1,544
TSH	14.2	3.40	1.58	4.79	1.59	1.51	0.04
Total T4							11.0
Free T3	2.8	2.83	3.13	2.87	2.75	2.62	1.60
Free T4	1.0	1.27	1.21	1.01	0.99	1.01	
β-hCG[3], mIU/mL			621	103,021	50,451	7,538	
Rx: L-T4, ug[4]	12.5	50.0	50.0	62.5	62.5	62.5	50.0

[1]TPOAb: microsomal antibodies; [2]TGAb: anti-thyroglobulin antibodies; [3]β-hCG: chorionic gonadotrophic hormone; [4]Rx: L-T4: levothyroxine sodium treatment ug/day.

36 and 30.5 in the third trimester, while thyroid hormone and TSH concentration remained within normal limits with treatment. After delivery, antithyroid antibodies rebounded to high numbers. See Table 1.

In the MLS patient, the same pattern was observed. The high numbers of antithyroid antibodies before pregnancy decreased throughout gestation until the third trimester and after delivery increased again. See Table 2.

Discussion

The most relevant information of this communication resides in the finding of a decrease in antithyroid antibodies during pregnancy in two women who, prior to their gestation, had been diagnosed as suffering from primary hypothyroidism caused by HT. Treated with levothyroxine sodium at an increasing dose, they were able to maintain a normal concentration of thyroid hormones throughout the observation period.

It has been described that 18% of pregnant women have some type of autoimmune disease, whether due to anti-TPO, anti-TG or thyroid function stimulating antibodies[3]. On the other hand, it is known that hypothyroidism in women leads to decreased reproductive capacity, increased miscarriages, hypermenorrhage, microcytic anemia, preeclampsia, placental abruption, postpartum hemorrhage, cardiac dysfunction, prematurity in newborns, low birth weight, congenital anomalies, neonatal mortality and poor neuropsychological development[3-6]. To avoid all these alterations, it is recommended that every woman in the reproductive stage who decides to have a family should have an early evaluation of thyroid function, including the determination of antithyroid antibodies, which facilitates the diagnosis of even subclinical alterations. The corresponding treatment will allow obtaining normal concentrations of thyroid hormones and will promote a normal reproductive capacity and that pregnancies, deliveries and the development of fetuses are appropriate[7-14].

In the natural history of this disease, it has been described that the titer of antithyroid antibodies is undulating and can even become negative when the thyroid gland becomes atrophic[15].

As noted, HT is much more common in females than in males, in a ratio of 7:1. It is treated with thyroid hormones to maintain a normal concentration of thyroid hormones in the blood. Although it is true that under usual conditions it is not essential to monitor the antithyroid antibody titer, it is no less true that in pregnancy there is a significant drop in its concentration, which could modify thyroid hormone concentrations, as well as the treatment, which in the case of the two patients did not occur. Gestation and delivery evolved within normal clinical conditions, except for the low birth weight of the newborn in patient MLS.

After delivery, a decrease in TSH was observed in both patients, revealing an increase in thyroid function due to a decrease in estrogens and TBG[1].

The explanation for the decrease in antithyroid antibodies during pregnancy is based on the fact that during gestation there is a decrease in the immune response to avoid rejection of the fetus, immunologically foreign to the mother, understood as an allograft[16,17].

The limitations of this work lie in the low number of cases.

It is concluded that pregnancy determines a decrease in the concentrations of antithyroid antibodies as a consequence of the decrease in the general immune response, mediated by the influence of the regulatory T cells[17,18]. In the two cases presented, this fact did not influence thyroid function, nor did it occur with the modification of the administered dose of sodium L-thyroxine.

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