

Research Article

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Particularities of The Occurrence of Pregnancy During Hypothyroidism: About A Cross-Sectional Study at The Pikine National Hospital Center

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Abstract

Introduction: Hypothyroidism is a frequent endocrine pathology, occurring predominantly in women during the reproductive period, with a sex ratio of 1:10. It may be responsible for obstetrical, fetal and neonatal complications.

Material and Methods: We carried out a retrospective, descriptive, cross-sectional study of 10 observations over a period of 67 months, with the aim of assessing the impact of hypothyroidism on the occurrence of pregnancy in pregnant women at Pikine Hospital.

Results: The prevalence was 3%. The mean age was 30 years (23-39). Family history of thyreopathy was present in 20% and diabetes in 30%. Hypothyroidism was known before pregnancy in all pregnant women. Average follow-up was 2.5 years. The delay in consultation was 14SA. Hypometabolism was present in 40% of pregnant women. The mean maternal TSH level was 8.99 mui/L (0.08-66). The etiologies of hypothyroidism were dominated by thyroidectomy in 6 cases, Hashimoto's thyroiditis in 3 cases and of undetermined cause in 1 case. Caesarean section was performed in 30% of parturients. Indications were: acute suffering; macrosomia and precious pregnancy. Average newborn weight was 3.14 kg (2.3 - 4.2). The mean dose of L-thyroxine was 110 µg. The mean neonatal TSH level was 1.29 mui/L. Complications included: 1 abortion, 1 MFIU, 1 SFA, 1 IUGR, 1 case of macrosomia, 2 cases of gestational diabetes. No neonatal dysthyroidism was found.

Conclusion: Pregnancy due to hypothyroidism is responsible for high maternal-fetal morbidity and mortality. Treatment must be early, specialized and multidisciplinary.

Keywords: hypothyroidism; pregnancy; gestational diabetes

Introduction

Hypothyroidism is a common endocrine pathology [1], it occurs by predilection in women during the period of genital activity with a sex ratio of 1/10 [2]. During pregnancy, the prevalence of hypothyroidism is estimated to be between 0.3 and 0.5% [4]. The gestation period requires increased needs for thyroid hormones and iodine; As a result, pregnant women are more likely to develop hypothyroidism [3,4]. It is a pathology that requires appropriate care in order to ward off maternal-fetal complications that can be life-threatening in the short and long term. In Senegal, only one study was found dealing with this association in 2006. This pioneering study in Africa, conducted by the team of Sidibé et al, had collected 2 cases [5]. It is with this in mind that, 17 years later, we decided to initiate this study in patients followed at the Pikine National Hospital. This was a retrospective, descriptive and cross-sectional study. The main

objectives of the study were to determine the clinical, etiological, therapeutic and evolutionary aspects of the occurrence of hypothyroidism during pregnancy at the National Hospital Center of Pikine.

Material and Method

We conducted a descriptive cross-sectional study covering a 67-month period from January 1, 2018 to July 31, 2023. We included in our study: female patients aged 18 to 45 years, who consulted during the period from January 1, 2018 to July 31, 2023 at the endocrinology department of the CHN Pikine and who had known primary hypothyroidism before pregnancy based on elevated TSH and/or total thyroidectomy; and a pregnancy confirmed using a urine (12IU/l) or blood (3IU/l) positive coupled with obstetric ultrasound. An investigation sheet was drawn up and included the following data:

- **Socio-demographic Data:** age, lifestyle, history/field (gesticity, parity, diabetes, high blood pressure; dyslipidemia; personal surgical history, family history of dysthyroidism, diabetes, hypertension, contraceptive information).
- **Hypothyroidism Data:** Duration of evolution; Etiology of hypothyroidism; L-thyroxine dose; Regularity of follow-up; Hormonal balance during pregnancy, Reasons for consultations, Constants (TA; FC; GC; Weight; BMI), Clinical signs (Psychomotor slowdown; Asthenia; thermophobia; goiter; exophthalmos), Paraclinical (maternal TSH; Maternal anti-TPO, Blood count, Fasting blood glucose).
- Obstetric and fetal ultrasound.
- **Follow-Up:** Maternal TSH / 6 weeks, Obstetric and fetal ultrasound.
- **Obstetric Data:** Pregnancy term; Number of ANC.

- **Evolutionary Data:** Materno-fetal complications: UCGR, MFIU, FSA; macrosomia, abortion, eclampsia, gestational diabetes.
- **Deliveries:** Vaginal delivery; Caesarean section.
- **Neonatal:** Apgar; Weight, Newborn TSH.

The data were analyzed by SPSS version 28 software.

Results

Epidemiological and sociodemographic data: During our study, we collected 10 patients, i.e., a prevalence of 3%. The average age was 30 years with extremes of 23 and 39 years. Diabetes was the main history found. In our population, 80% of our patients had a follow-up of less than or equal to 3 Years. In our study, 50% of pregnant women had consulted in the 1st trimester, 20% in the 2nd trimester and 30% in the 3rd trimester.

The various sociodemographic and epidemiological data are listed in Table 1.

Table 1: Distribution of patients by socio-demographic data.

Variables	Data	Staff
Ages	<25 years	1
	25-35 years	4
	>35 years	5
Background	Familial Thyroopathy ATCD	2
	Diabetes	3
	Diabetes + Thyroopathy	2
	Iatrogenic hyperparathyroidism	1
	Abortion	1
Parity	Average	1
	Maximum	0
	Minimum	5
Gesturity	<2	4
	2-4	5
	>4	1
	Average	2
	Maximum	6
	Minimum	1
Duration of Follow-Up (Years)	Average	2,5
	Minimum	1
	Maximum	6
Delay in Consultation (SA)	Average	14
	Minimum	8
	Maximum	28

Hypothyroidism Data

Hypometabolism was present in 40% of pregnant women, clinical euthyroidism in 50% and iatrogenic hyperthyroidism in 10% of patients. In our series, the mean TSH level was 8.99 mui/L with extremes between 0.08 and 66 mui/L. Hormonal balance was

achieved by 30% of pregnant women in the 1st trimester and by 20% of pregnant women in the 3rd trimester (Figure 1). Normalization of TSH was achieved in 30% after 15 weeks of follow-up. The TSH achievement rate was 2.6-fold with extremes between 1-6 times.

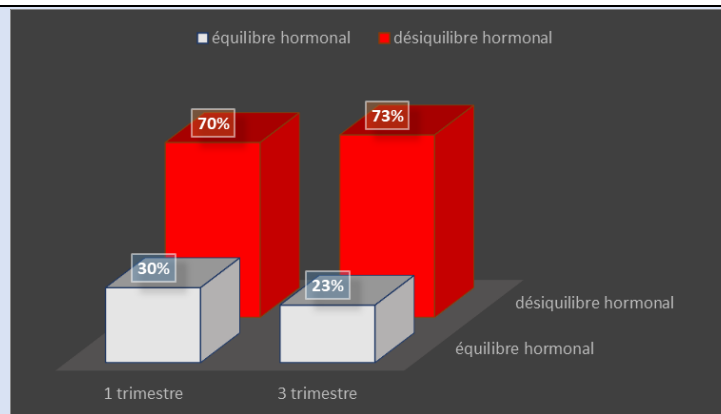


Figure 1: Hormonal balance according to term.

In our series, hypothyroidism was due to total thyroidectomy in 60% of cases, followed by Hashimoto's disease in 30% cases and in 10% cases of peripheral hypothyroidism of undetermined etiology. Thyroidectomy was indicated for Graves' disease in 67% of cases, and for non-toxic multinodular goiters in 33% of cases. All our patients were on L-thyroxine supplementation. The mean dose of L-thyroxine was 110 µg with extremes between 100 and 175 µg. In the 1st trimester, the mean dose of L-thyroxine was 106 µg. In the 3rd trimester, the average dose of L-thyroxine was 144 µg. After delivery, the mean dose of L-thyroxine was 93.5 µg.

Pregnancy Data

The average number of antenatal visits was 3.5 with extremes between 0 and 5. In our study, 7 out of 10 pregnant women had at least 4 ANC visits (Figure 2). The mean term of pregnancy was 38.8 weeks, with extremes between 38 and 40 weeks. In our series, 6 pregnant women had given birth vaginally; 3 by caesarean section. The 3 indications for caesarean sections were: fetal macrosomia + excessive uterine height, SFA+ onset dystocia, precious pregnancy (primary infertility for 10 years).

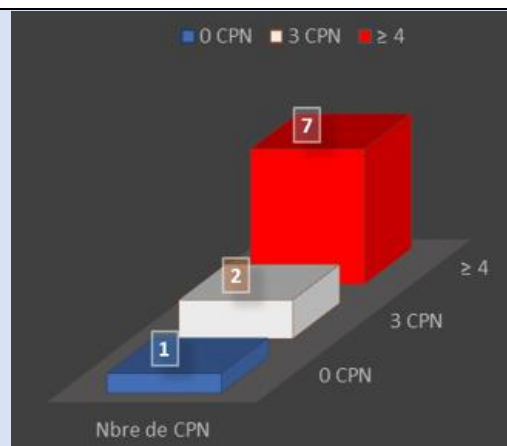


Figure 2: Distribution of prenatal consultations.

Neonatal Data

The mean weight of newborns was 3.14 Kg with extremes between 2.3 Kg and 4.2 Kg. One case of macrosomia and 1 case of fetal hypotrophy were found. The newborns were of normal weight in 7 cases. The average score of APGAR at the 1st minute was 8.6 with extremes between 6 and 10. The average score of APGAR at the 5th minute was 9.7 with

extremes between 8 and 10. In our study, 30% of newborns had a TSH test. The average rate was 1.29 mui/L.

Evolutionary Data

Maternal complications were dominated by gestational diabetes with 2 cases. The various maternal-fetal complications are listed in Table 2.

Table 2: Distribution of complications found.

Complications	Name of Cases
Abortion	1
Fetal Death in Utero	1
Acute Fetal Distress	1
Intrauterine Growth Restriction	1
Macrosomia	1
Gestational Diabetes	2

Discussion

In our study, the prevalence was 3%. This result is similar to the African data. This was particularly true in the Tunisian [6] and Ivorian [7] series, which reported a prevalence of 2% and 1.9% respectively. This prevalence differs from the international one, which is around 0.3 to 0.7%. We believe that large studies are needed to determine the true African prevalence. The average age of our patients was 30 years old. These results are quite close to the data in the literature. Indeed, Adoueni [7], Rchachi [8], and Sidibe [5], had an average age of 28, 32 and 29 respectively. The delay in consultation was about 14 weeks on average. This is roughly comparable to the Diallo data [9], which found 53.1% in the 1st quarter, 43.8% in the 2nd quarter and 3.1% in the 3rd quarter. This delay could be explained by the glaring lack of specialists in our regions. But also, the delay in referrals to dedicated specialists. In our study, 40% of pregnant women had clinical hypometabolism. This result was different from Diallo [9] who found 83.3% hypometabolism. This discrepancy could be explained by the fact that all patients were already on treatment before pregnancy.

Hormonal balance was achieved by 3 pregnant women in the 1st trimester and by 2 pregnant women in the 3rd trimester. These data are comparable to the results of Diallo [9] who found only 3 patients in the 1st trimester and none in the 3rd trimester. The TSH completion rate was 2.6-fold. While the recommendations are at least 4 dosages during pregnancy [10]. This discrepancy could be explained by the cost of the dosage but also by its unavailability. In our series, the main cause of hypothyroidism was total thyroidectomy (60%). These results are similar to those found in the Rchachi series [8]. The mean dose of L-thyroxine was 110 µg. The need for levothyroxine was much higher in the 2nd and 3rd trimester. These data are similar to those found in Kiran's 2022 study, which reported an average dose of 100 µg of L-thyroxine [11]. Some elevations in TSH can be explained by non-adherence to drug shortages

and inaccessibility in certain areas of the country. In our study, we found several maternal-fetal complications. Indeed, we had recorded 1 case of abortions, 1 case of fetal death in utero, 1 case of acute fetal distress, 1 case of chronic fetal distress and 1 case of macrosomia. There is strong evidence that maternal hypothyroidism is associated with maternal-fetal complications. Indeed, a meta-analysis including eighteen studies revealed that maternal hypothyroidism was associated with abortion, intrauterine fetal death (511; 39). This is confirmed by the study by Rchachi [8] which found 2 cases of spontaneous abortions.

Anti-thyroid peroxidase (Anti-TPO) antibodies increase the abortion rate (6.28). The pregnant woman who had IUD, had a history of spontaneous abortion and was being followed for Hashimoto's disease. In our study, we found 2 cases of gestational diabetes. Our patients had risk factors for gestational diabetes. Hypothyroidism has been identified as a risk factor for gestational diabetes. Indeed, a meta-analysis including 7 articles described the relationship between hypothyroidism and the risk of gestational diabetes. Its findings indicated that hypothyroidism may be a risk factor for gestational diabetes. Schuldiner [1] found an association of gestational diabetes and hypothyroidism in 26.67% with a prevalence of anti-TPO of 4.76%. This conclusion requires the search for hypothyroidism in gestational diabetes. In our series, 6 pregnant women had given birth vaginally and 3 by caesarean section. Hypothyroidism appears to increase the rate of caesarean section.

Conclusion

The impact of hypothyroidism is considerable on the maternal-fetal prognosis. It is important to do a good follow-up with the pregnant mother to avoid these complications. This is how regular, clinical and biological monitoring will be offered to the mother and later to the newborn.

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