Hypothyroidism in recurrent abortion

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Abstract

Aim : to ascertain the prevalence of hypothyroidism in Iraqi women who experience repeated first trimester pregnancy loss .setting and design: the fifty (50) women were involved in the study ; 25 of study group's members had lost two or more pregnancies in the first trimester , and 25 of the control group's members had never lost a pregnancy.Method: Thyroid hormones (TSH) and(T4) levels in women in the study group were estemated .

Results: women who experienced repeated first trimester pregnancy loss had significantly different serum T4 and TSH levels between euthyroid and hypothyroid women. The study concludes that there is a statistically significant correlation between hypothyroidism and recurrent pregnancy loss in the first trimester implies that a hypothyroidism diagnosis may be able to improve the prognosis of couples who exprerience repeatead miscarriages.

Introduction

Three or more consecutive spontaneous pregnancy losses before 20 weeks of gestation are referred to as recurrent pregnancy loss, or RPL (1). Recurrent pregnancy loss is associated with hypothyroidism . It is commonly known that thyroid hormones is necessary for the development of numerous tissues,including the heart and brain. It's unclear how thyroid hormones affect the development of reproductive tissues that could affect fertility. The female and male gonads are among the many organs affected by non-thyroid dysfunction, Which is common . It disrupts human reproductive physiology, which lowers the chance of conception and negative impacts the course of pregnancy making it significant in the algorithm of reproductive dysfunction(2). Thyroid hormones are given to the fetus by the mother early in the pregnanch. The mother can't gives her fetus enough thyroid hormones if she has hypothyroidism. Therefore one risk factor for repeated pregnancy loss is hypothyroidism . Poor association exists between the thyroid status of the mother and the fetus, and hypothyroid mothers frequently give birth to euthyroid children. Early in pregnancy , thyroid issues can have serious consequences , therefore testing can be necessary (3). It is possible that up to 5% of women in the reproductive age group have hypothyroidism (4). Even mild hypothyroidism may have a negative impact on the offsprinh's subsequent cognitive development in addition to raising the risk of miscarriage and fetal mortaliry . Thyroid economy is impacted by pregnancy , with notable modifications to iodine metabolism and serum thyroid binding proteins ,and the development of maternal goiter, particularly in regions lacking in iodine. Before and during pregnancy , there is constant interaction between the gonadal axis and the thyroid gland. By raising prolactin release and lowering sex-hormone binding globulin levels ,hypothyroidism affects ovarian function(5).

Thyroid illness , miscarriage ,infertility ,and unfavorable pregnancy outcomes are strongly correlated(6). Acording to reports subclinical thyroid and hypothyroidism increased rates of placental abruption,premature deliveries ,miscarriages, prenatal hypertension, fetal discomfort, preeclampsia,neonatal distress,and gestational diabetes mellitus are linked to autoimmune illness (7). Early pregnancy physiological changes can have a significant effect on thyroid function. Early in pregnancy rapidly raising beta human chorionic gonadotrophin activates the thyroid gland directly by binding to the TSH receptor, temporarily boosting thyroxin synthesis(8). The following factors influence the occurrence of hypothyroidism: race ,age, sex and geography. The TSH level that is used to diagnose hypothyroidism also affects the prevalence (9).

Aim and objective

To examine the association between hypothyroidism and recurrent pregnancy losses ,as well as the thyroid status in women experiencing first trimestsr prsgnancy losses.

Method

This case control study was carried out at the Al-Batool hospital between september 2023 and february 2024. Fifty (50) women in the reproductive age range of 15 to 45 years old were included in the study. 25 women with two or more pregnancy losses during the firsttrimester are part of the study group. There are 25 women in the control group who have never experienced pregnancy loss.

Women with hyperprolactinemia , autoimmune diseases ,thyroid conditions ,diabetes mellitus ,history of indicative of poly cystic ovarian syndrome(pcos) ,history of cervical incompetence,or any other uterine pathology were excluded.

Every women receives a medical check up that includes a complete physical examination and a detailed history taking. TSH and T4 hormones tests were performed on women in the tenth (10) week of gestation.

Results

Normal range of TSH (0.5- 5)microunit per ml .

Normal range of T4 (5.4-11.2) microgram per dl.

Patients age	Frequency	T4 value(µg /dl)	TSH(µU /ml) value
15-20	4	4.4-10.8	1.9-5.4
20-25	5	3.9-9.5	2.4-5.8
25-30	9	4.1-10.9	3.1-5.9
30-35	4	4.5-10.7	3.8-6.2
35-40	3	2.9-8.5	4.4-6.8

Table 1 showing the relation of the levels of TSH and T4 to age groups of study group.

Patients age group	Frequency	▮´4 value (µg/dL)	TSH(µU /ml) value
15-20	5	4.3-11.2	2.1-4.5
20-25	4	4.5-10.9	1.9-4.9
25-30	4	4.6-10.5	3.2-4
30-35	6	3.5-9.7	4.5-5.2
35-40	6	3.6-9.8	4.7-5.7

Table 2 showing the relation of the levels of TSH and T4 to age groups in control study.

Study group	Pregnancy losses	Average(%)
11	**2**	**44**
8	**3**	**32**
6	**4**	**24**

Table 3 showing the number of pregnancy losses of study group.

Group	Positive cases of hypothyroidism	Percent(%)	P.value
Study group	**7**	28	**0.0072**
Control group	**2**	8	

Table 4 showing the number of hypothyroidism patients in study group and control group.

Descussion

This is a case control study designed to asses thyroid function in expectant mothers who have experienced repeated miscarriges . In light of the elevated alterations in the thyroid gland's requirement for healthy growth, development, and metabolic balance during pregnancy and fetal to meet the needs of the mother and fetus throughout pregnancy, life the thyroid's availability must be boosted by 40% to 100% in order to provide for the fetus's needs while the pregnant woman's needs (10).It's unclear if functional issues relate to the physiological changes in thyroid have an impact on the genesis of function during pregnancy spontaneous miscarriage(11). The goal of the current study was to assess thyroid hormones in expectant mothers. One possible cause of the decline in free T4 levels could be non-pituitary stimulation of thyroid .hormone secretion (hCG) (12).

The increased TSH levels seen in the group with recurrent miscarrige indicate that there is insufficient thyroid hormone in the bloodstream to prevent the hypothalamus from being stimulated to release TRH

to anterior pituitary to suppress stimulation of synthesis and secretion of TSH(13). According to the evaluation approach of low serum TSH level, the majority of miscarriage women are euthyroid due to the low levels of TSH in these women being connected with a large percentage of normal FT4 values (14).

The mother may be more likely to miscarry if she doesn't have enough thyroid hormones because the fetus's thyroid gland doesn't fully develop until after fifteen weeks of gestation.

It takes a woman four to six weeks after her last menstrual cycle to know for sure that she is pregnant. They wait until the third trimester is more than half gone to visit the doctor and have their thyroid function tested. Thus, as soon as a pregnant person becomes aware of their pregnancy, it is advised that they get a thyroid test (15).

As long as individuals with subclinical hypothyroidism receive the recommended dosage of thyroxin, there might not be any harm in treating them (16)

Iodine is lost through urine during pregnancy, so the feto-placental unit

adds to the relative iodine deficient status. Pregnant women therefore require a higher iodine intake. It is advised to consume 250 micrograms of iodine every day when pregnant (17).

Few studies suggest that thyroxine medication may be useful in preventing miscarriages when given in the first trimester of pregnancy (18).

It is recommended that women with modest thyroid problems receive LT4 treatment because the possible benefits are deemed to exceed the severe adverse effects in the -potential risks, there are greater rates of LT4, gestational diabetes mellitus, and pre- eclampsia (19). It was discovered that, in comparison to women who end up miscarrying, the rate of any low thyroid status was much higher in women who did not miscarry (20).

Strenghs and limitations

The purpose of this study is to determine whether hypothyroidism and recurrent abortion are related. The technique for determining the amounts of free T4 and serum TSH. Every variable that could have an excluded whenever feasible, impact on the outcome had been diagnosed with overt hypothyroidism, or using any medications that may impact thyroid function. Due to time constraints, financial concerns, and selection criteria, we decided to employ a small sample size, which may have an impact on the outcome .

Conclusion

All expectant women should be checked for thyroid abnormalities during their initial appointment, and treatment should begin as soon as possible, as hypothyroidism can result in first-trimester abortions if left untreated.

Abbreviations

TSH: thyroid stimulationg hormone

TRH : thyroid releasing hormone

T4: thyroxin

FT4: free thyroxin

hCG : human chorionic gonadotrophin

LT4: levothyroxin

µg : microgram

µU : microunit