

Measuring some hormonal Levels of infertile women in Samarra city - Iraq

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Abstract. Population-based on infertility data collecting from a woman with thyroid gland diseases or sub-clinical thyroid (hyperthyroidism and hypothyroidism) in Samarra city. Thus, the plan was to search about thyroid status and some hormone levels in infertility woman. The aim of the study was to determine the levels of LH, FSH, TSH, T3, T4 from the serum of infertile women in Samarra city, and to explain the relationship between hormone levels and the probability to cause infertility. The results showed a significant difference at ($P \leq 0.05$) between levels of LH of infertile women as compared with intact group. The results also showed a significant difference at ($P < 0.05$) of (TSH, T3, T4) of infertile women as compared with intact; there were no significant differences at ($P < 0.05$) of (FSH) level between infertile women & intact.

1. Introduction

Infertility is the Inability to have children of a couple individual after one year of unprotected regular intercourse. Its number guessed to be 10-15% in any community [1, 24]. Therefore, It is a common condition with important money-based medical and mental effects leading to desperation. Thyroid (chemicals produced by the body) were extremely important for commonly and regular healthy growth, sexual development, and function (related to the process of making children) [2, 25]. Both hyperthyroidism and hypothyroidism were related to a change in functions including delayed beginning of (the age at which a person can make a baby), menstrual sicknesses, an ovulatory cycle, inability to have children and wastage pregnancy is at [3, 23]. This way thyroid with harmful, angry behaviors may affect a lot of life-creating ability in females [4, 22]. Untreated thyroid and Undiagnosed disease can be a cause for infertility as well as sub-life-creating ability. The number, examining and testing so a decision can be made and treatment of sub-medicine-based. In many studies, Thyroid sicknesses in patients have been discussed, but no agreement has been received [5, 16]. The process of figuring out the worth, amount, or quality of thyroid status in the couples suffering of infertility is important not only because it is significant and most common, but also its treatment is very simple and often has able to be undone, or turned inside-out and used or preventable effects inability to have children [6, 20], [7, 21]. Relationship data between subclinical thyroid and infertility roughly remain as patient subgroups still unrecognized. The emotional adjustment undergoing



treatments has been widely studied; however, it remains unclear whether infertility history contributes to couples' adjustment [8, 26].

There is a complex association between sexual behavior and inability to have children "infertility". Angry sexual behaviors can cause a conception delay, but also can be the result of status that not understood [9, 27]. The greatest chance of conception is through sexual intercourse on many occasions during the period of life-giving. The Inability to have children may be the result of sexual diseases. Therefore, examination of infertility should include a couple's sexual behavior [10, 19]. Not very long time ago, disturbances of hormones have thought about great importance to know the causes and identification of a disease, or its cause of female infertility. Increasing FSH levels in women may point to decreasing in good quality eggs production for fertilization. Women's chance for pregnancy may be lower than others thought her age. However, this does not mean she has no chance of giving birth. She may have difficulty conceiving condition and just may require a treatment [11, 18]. Both men and women have LH hormone, which produced in the pituitary gland. In women, LH is essential for the menstrual cycle. It works along with hair root-stimulating (FSH). Estrogen hormone increasing levels causes girl to be women, also tells the pituitary gland to decrease FSH until stop and increasing LH. The transition to LH cause releasing egg from the ovary, a process called ovulation[12, 28]. The diagnosis of infertility is in fact a prognosis, based on a rough estimate future chance of pregnancy in a reasonable time frame. Investigations comes after the role to identify any obvious barriers to conception. In the absence of any such factors, infertility is conventionally termed as unexplained [6]. Generally, high levels of LH than normal in a woman may mean the ovaries are not functioning. In a young woman, high levels may mean that puberty is early [13, 17].

2 Materials and Method

2,1 Collection of Blood Samples:

Samples were collected for each infertile woman with the permission to measure hormone levels. All 90 blood samples were collected in order to standardize the time of collected which may affect certain blood parameters. Blood samples (5) ml collected from venous blood. The collected blood from each patient deposited into a tube without anticoagulant and allowed to clot at room temperature. Then the tubes were centrifuged at 3,000 rpm for 15 minutes and the serum samples were stored at -20 °c until used for hormonal analysis.

2,2 Thyroid Hormone Levels

Levels of Thyroid Hormones (T3, T4, TSH) were estimated by using the Enzyme Linked Immuno Sorbant Assay (ELISA) kit from (Monobind Inc., USA); This test measures the amount of Thyrotropin or thyroid-stimulating hormone (TSH) in patient blood. Other hormones (LH & FSH) were determined in blood serum using also the Enzyme Linked Immuno Sorbant Assay (ELISA) kit by (Monobind Inc. Lake Forest USA).

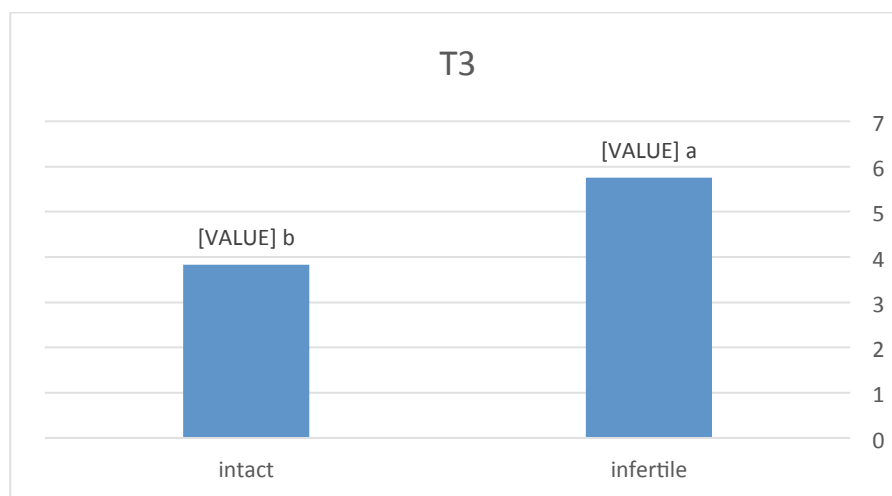
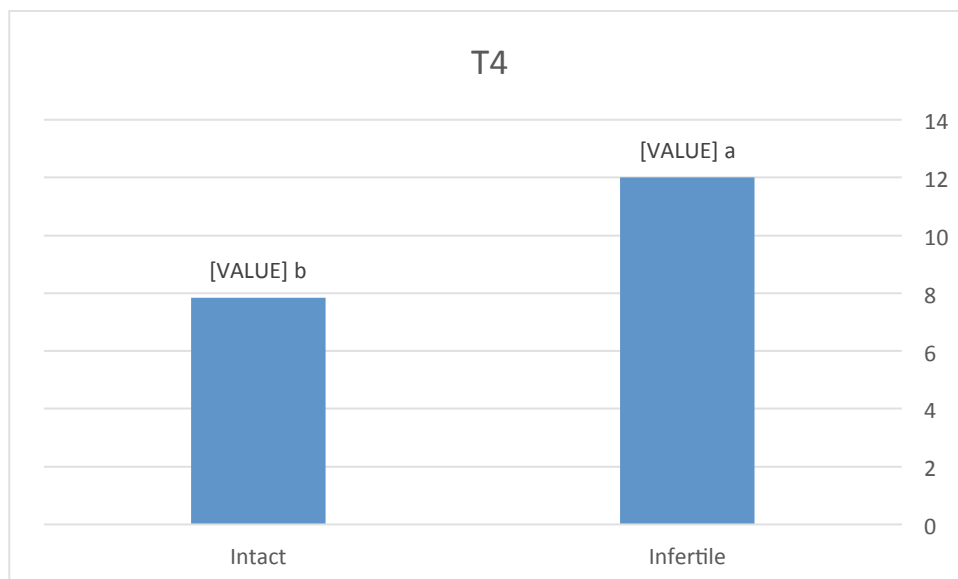
2,3 Bio-Statistical Analysis

The results were triplicated, expressed as mean \pm SD due to results may be higher or lower than standard deviation. *T*-test was used by SPSS software on computer version 23 for assessment of the results. Significant variation was considered when the *P* value less than 0.05.

3 Results & Discussion

Table 1: Hormone Levels

FSH	LH	TSH	T4	T3	Study groups
3.7789 a ±	4.6689 a ±	4.4551 a ±	12.0022 a ±	5.7531a ±	Infertile Mean ± S.D
1.26350 4.0884 a ±	1.89769 2.354 b ±	1.75068 3.6670 b ±	4.98229 7.8430 b ±	2.58360 3.834 b ±	Intact Mean ± S.D
0.8900	0.45	1.20	2.8374	1.103	

**Fig.1** Levels of (T3) Hormone between groups**Fig. 2** Levels of (T4) Hormone between groups

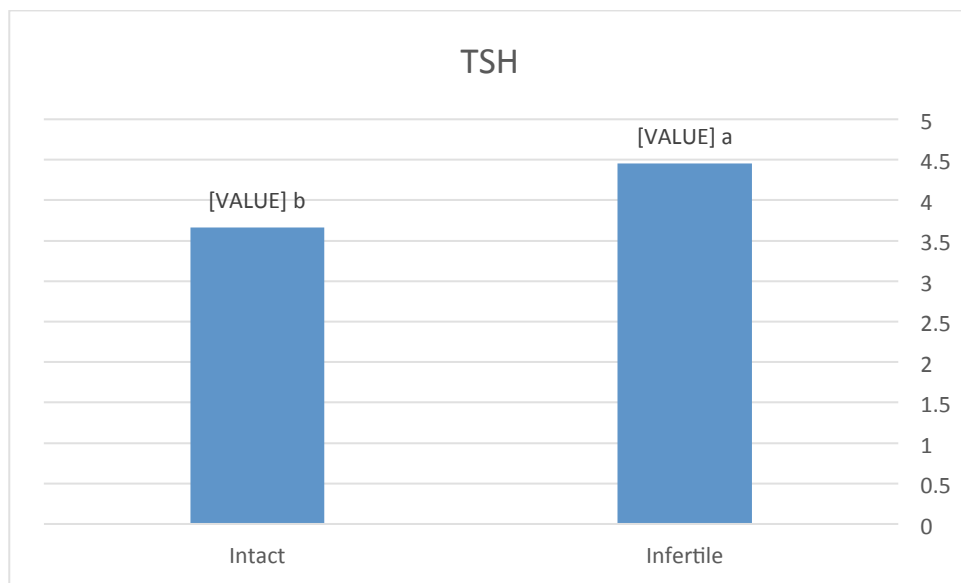


Fig. 3 Levels of (TSH) Hormone between groups

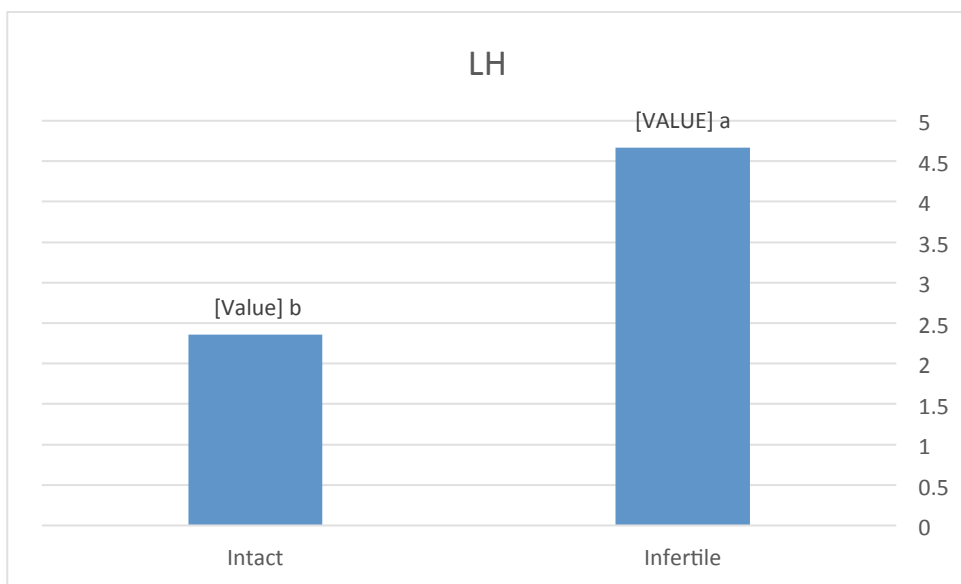


Fig. 4 Levels of (LH) Hormone between groups

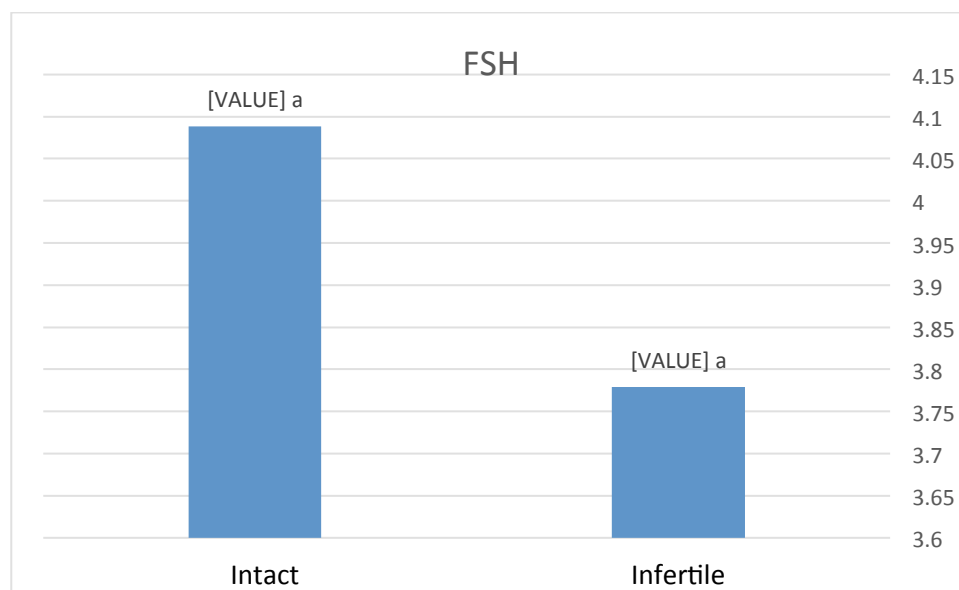


Fig. 5 Level of (FSH) between the study groups

The current study showed as in table (1) there was a significance difference ($P \leq 0.05$) in LH hormone concentration of infertile women compared to control. The current results are consistent with each result of [13] and [14] and [15], while not consistent with the results finding of both [15] and [2] who found a significant decrease in LH hormone concentration in infertile compared with intact.

The high hormone concentration may be an imbalance indicator secretion process of LH hormone; the more higher hormone concentration meant to higher incidence rate of infertile women. Poly Cystic Ovarian Syndrome (PCOS) disease may cause high levels of LH hormone in infertile woman where the results appear in a number of studies that there was decreased and increased secretions ratio of FSH hormone. The LH hormone in infertile women having PCOS may reach (2:1) which made the ovary unable to produce the hormones in the right way [11], [12]. Also, [10] pointed that high LH hormone concentration indicates the occurrence of dysfunction in the pituitary gland.

The result in the table shows the effect of FSH hormone concentration between infertile woman and intact, there was no significant differences. The FSH hormone is one of most important controlling hormones the maturation and development of eggs [10]. Increase or decrease FSH hormone levels can cause imbalance in ovulation process loss mechanism feedback. This function may be a sign of infertility or menopause approaches; it occurs because of psychological stress or imbalance in diet systems [9].

As FSH hormone product released from Anterior's lobe of the pituitary gland, stimulating the ovaries for growth purpose and development of ovarian follicles and thus ripening eggs and emancipation [11]. It is characterized by its presence in a few concentrations of adolescent woman and oscillates slightly between the menstrual cycle and the advancement of woman and other age-fewer eggs. Fluctuation hormone level become so high and remain high concentration until woman enter menopause in at the end, which reflect the old aging [6].

The results showed significant differences in the concentrations of T3 and T4 hormones in infertile female compared with intact. TSH showed significant differences at the level ($P < 0.05$) [12]. TSH hormone (thyroid stimulating hormone) secreted by the anterior lobe of the pituitary gland by arrivals of the signal from the area of Hypothalamus gland. Thyroid gland activated produce and secretions of

T3 and T4 which affect producing and secretion of TSH through reverse feedback nutrition mechanism.

The natural function of the reproductive system in most animals depends on thyroid gland effectiveness; it stimulated the formation of sperm process in males when the hormone levels are normal. While the shortage in hormone doses leads to a decline in the synthesis of sperm process and disorder of the menstrual cycle, also it may cause a difficulty in the incidence of fertilization and pregnancy in females as well as abortion [5], [6].

Hypothyroidism and Hyperthyroidism were among different causes of infertility in woman [4]. Overlap thyroid hormones with reproductive hormones interfere to maintain the normal functions of development of the egg and ovaries. Thus, excess secretion or lack secretion of these hormones can cause the imbalance in reproductive hormones, leading to ovulation disorders and irregular monthly cycle and low fertility [3], [2]. The levels of TSH represent a significant indicator of the failure of infertility in woman undergoing in vitro insemination, which shows the important role of thyroid hormones in the physiology of the Oocyte [1]. Infertility is estimated to affect as many as 186 million people worldwide. Although male infertility contributes to more than half of all cases of global childlessness, infertile remains a woman's social burden [11].

4 Conclusions

Results showed a relationship between levels of thyroid hormones T3 & T4 and the chance of infertility among women. The results showed no direct relationship between CH hormone and the likelihood of infertility. One of the causes of infertility among women may be a difference in levels of the hormone LH and FSH.

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