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A Comparison Effect of Dysmenorrhea and Secondary Amenorrhea in the Concentration of Some Biochemical and Some Hormones in Women in Tikrit City

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ABSTRACT

This study was conducted in the city of Tikrit – Salaha-Din General Hospital for the period from November 2017 to June 2018 to compare the effects of dysmenorrhea and secondary amenorrhea in blood glucose concentrations, cholesterol, and some hormones FSH, LH, PRL, Progesterone, Estrogen, and Testosterone in women in Tikrit. Salahal-Den government the number of women with dysmenorrhea, secondary amenorrhea, and healthy (30) in all women group respectively. 5ml blood was withdrawn from all women in the study and the serum was separated by common laboratory methods. The results showed no significant differences between all study groups in blood glucose concentrations, while women with secondary amenorrhea were significantly higher ($P \leq 0.05$) in cholesterol concentrations compared to the healthy group and significantly higher ($P \leq 0.01$) for women with secondary amenorrhea in FSH, LH, PRL, Progesterone, E2, Testosterone compared to the group of women with dysmenorrhea and the group of healthy. The group of women with dysmenorrhea was significantly higher ($P \leq 0.05$) in Progesterone, Testosterone concentrations comported with the healthy women group and Women with dysmenorrhea. We conclusion that secondary amenorrhea was a more effective in increasing concentrations of hormones that prevent the occurrence of ovulation compared with the dysmenorrhea effects.

Introduction

The menstrual disorders are the social health problems experienced by women in the pre-secondary amenorrhea stage in the world in general. Previous studies have pointed to the psychological, economic and social pressures on women, which sometimes have a negative impact on their lives [1]. Menstrual irregularity is one of the main problems of women of childbearing age. [2]. The menstrual cycle is a series of vital natural changes in women's lives, a natural event that represents the years of fertility, reproduction and menstruation, and is an indicator of women's health. Most women at this stage suffer from a variety of symptoms due to hormonal changes [3]. The hormonal changes associated with menstrual disorders, such as the low and high concentration of certain hormones, have some important effects on the concentration of fats and lipids in blood plasma, which affects the concentration of these fats in the serum. This has a significant relationship with the development of a number of cardiovascular diseases [4]. Dysmenorrhea, also known as painful menstruation, is accompanied by severe or moderate cramps due to different factors associated with the disease. As well as dysmenorrhea has a negative impact on the life of women in terms of relationships in the decline of physical or professional performance and social activity and restriction of daily activities and has negative effects on the mood, causing anxiety and depression [2,5,6]. The menstrual cycle is a series of natural changes in the natural life of women, a natural event representing the years of fertility, reproduction and menstruation, as well as it is a unique phenomenon, and is an indicator of women's health. And that most women at this stage suffer from a variety of symptoms due to hormonal changes and these symptoms can be acute and frequent, some

women have symptoms more severe and others who do not have any symptoms at all, and women who have had premature menstrual periods [3].

The hormonal changes associated with menstrual disorders, such as the low and high concentrations of certain hormones, have some important effects in the concentration of fat and lipoproteins in blood plasma, affecting the concentrations of these fats in it, and this has a significant relationship with the development and emergence of a number of cardiovascular diseases. Therefore, dysmenorrhea has a negative impact on the life of women [5,6] and for the purpose of knowledge of the impact of secondary amenorrhea and secondary amenorrhea in women during the stage of reproduction and compare their effect in the concentrations of some hormones and know which the most influential. This study was proposed to compare the impact of each of dysmenorrhea and secondary amenorrhea in concentrations of hormones.

Materials and methods

This study was conducted in the city of Tikrit – Salaha-Din General Hospital for the period from November 2017 to June 2018 to compare the effects of dysmenorrhea and secondary amenorrhea in the concentrations of certain hormones follicle stimulating hormone (FSH), luteinizing hormone (LH), prolactin(PRL), estrogen (E2), progesterone and testosterone, in women by using number of Kits to determine these hormones which measured using by ELIZA technique. And the denervation of Glucose and cholesterol by spectrophotometer apparatus, The number of women with dysmenorrhea, secondary amenorrhea, and the healthy were (30 30, 30) woman respectively, each group, ranged between (15-45) years [7]. All patient cases were diagnosed by the specialist medical staff at the hospital above. Blood samples of 7ml from the brachial vein were extracted using a syringe of 90 women in this study.

Blood was separated by common laboratory methods and the concentrations of the hormones studied were calculated. The measurement of the hormones was measured by the number of Kits using the ELIZA technique. The concentration of blood glucose and cholesterol concentrations was measured using the spectrophotometer.

The results were statistically analyzed in the SPSS method and comparisons between the mean were made by Duncan method [8].

Results and discussion

The results of our current study from Table(1) showed no significant differences in the concentration of glucose sugar in the serum of women with secondary amenorrhea dysfunction compared to the controls. Our results were consistent with the findings of [2] who explain that the cause of menstrual disorders was not associated with metabolic disorders of glucose and insulin resistance in menopausal women [2].

Table (1) shows no significant difference in the concentration of serum cholesterol for women with dysmenorrhea and secondary amenorrhea compared to the healthy and our results were not consistent with what was found by [9]. There is a significant increase in cholesterol in women with polycystic ovary which causes secondary amenorrhea. Women with polycystic ovary syndrome also suffer from an imbalance in serum lipid concentrations and thus high levels of cholesterol, triglycerides, and low-density lipoprotein. These results differ depending on body weight, diet, and ethnicity. It has been observed that the most fat changes HDL-C and may play hyperpnoea. The change in the androgen concentrations plays an important role in this change, but it appears that the excess of insulin (insulin resistance) has a more dominant effect in this change [10].

Table (1) comparison of glucose and cholesterol concentration between Dysmenorrhea, secondary amenorrhea and, healthy women

Hormones	Mean ± Standard division		
	Dysmenorrhea 30	Secondary amenorrhea 30	Control 30
Glucose mg/dl	a 25,1 ± 81.53	a 17,6 ±90.43	a 23.6 ±86.83
Cholesterol mg/dl	b 43.6 ± 149.20	a 30.8± 169.43	a 35.9 ± 153.57

Horizontal letters mean that there are significant differences in the level ($p \leq 0.01$), ($p \leq 0.05$).

Comparison the changes in FSH and LH hormones

Table (2) shows that women with secondary amenorrhea are significantly higher ($P \leq 0.01$) in FSH and LH concentrations than in dysmenorrhea and healthy women. Our results were not consistent with the findings of [11], which found a significant differences in serum FSH concentrations when comparing women with dysmenorrhea with control group, which was high at the menstrual stage; the reason was that these mechanisms were mainly regulated by hypothalamus and pituitary gland.

Table (2) Comparison of dysmenorrhea and secondary amenorrhea in concentrations of FSH and LH hormones

Hormones	Mean ± Standard division		
	Dysmenorrhea 30	Secondary amenorrhea 30	Control 30
FSH ng/ml	b 3.35 ± 7.28	a 19.06 ± 28.34	b 3.42± 6.10
LH ng/ml	b 3.73± 5.94	a 1.24 ± 12.44	b 4.59± 7.34

Horizontal letters means significant differences at the level ($p \leq 0.01$), ($p \leq 0.05$).

The effect of oxytocin on the non-pregnant uterus appears to be more important than previously thought. These results were consistent with the findings of [9] which found elevated FSH concentrations especially in women suffering from secondary amenorrhea ;the reason is that the concentration of FSH in the serum of women who suffer from secondary amenorrhea, especially

secondary Amenorrhea to increase the concentrations of this hormone is believed to be due to the low level of hormone E2 and Progesterone in their assets [14] . When comparing the concentration of FSH and LH with the time period of the disease and this confirmed by other studies [12,13], other studies have also indicated that the low level of FSH hormone coincides with the low concentration of LH due to pituitary dysfunction. When comparing the concentration of LH with FSH where the relationship was positive, the increase of the two hormones coincided with the reduction of hormones E2 and Progesterone in the patient incontinence of women with early ovarian disability and decreased hormone LH, FSH was observed in patients who have dysfunction in the pituitary gland, [15]. The high concentration of FSH or LH indicates that there is a defect in the ovary (hypothyroidism or hyperthyroidism). Low or normal FSH or LH levels indicate a defect in the pituitary or hypothalamus [7].
The high concentration of FSH as demonstrated by the results of our current study may indicate a decrease in the supply of early ovarian reserve or early disability and as a result women become less fertile gradually. [16] Furthermore, the reason for the rise of FSH may be due to, among other reasons, Autoimmune Disorders such as hypothyroidism, adrenal glands, chromosomal defects, intermittent use of oral contraceptive pills, pelvic inflammatory disease, abortion, pelvic inflammatory diseases, chemotherapy and radiation therapy [17] [18].
Our results for women with dysmenorrhea were consistent with the findings of [10] when compared healthy women with dysmenorrhea women in the concentrations of LH where no significant differences were observed, and the reason is; that these mechanisms are organized mainly through the hypothalamus and pituitary gland. The effect of oxytocin on the non-pregnant uterus appears to be more important than previously thought. Our findings concurred with the findings of [19] which found significant differences in LH when studying secondary menopausal women due to polycystic ovary syndrome and women with premature ovarian failure. The cause was due to abnormal reactions of estrogen. These results were consistent with what was indicated [11, 20]. It was found that the concentration of LH in the serum, especially women with secondary amenorrhea and Polycystic ovary is high and attributed to the increased concentration of LH hormone in the blood supply of the majority of menopausal patients Secondary amenorrhea is due to the injury of large numbers of patients with PCOS because of an imbalance in the secretion of hormone LH and FSH as the ratio was (2: 1, FSH: LH). This imbalance made the ovaries unable to produce hormones properly, leading to menstrual cycle disorder [21]. The high level of LH in serum patients was due to low levels of estrogen and Progesterone where it is known that LH is inhibited by high levels of estrogen. and progesterone through the mechanism of feedback negative [22].
Since the level of these hormones was low in the majority of patients, it leads to the rise of LH, which indicates the incidence of primary pituitary dysfunction [23]. These results are consistent with the results of many researchers [24,25]. We did not notice a significant difference of dysmenorrhea compared with the healthy women.

Comparison the effect of changes in prolactin

Table (3) shows that women with secondary amenorrhea are significantly higher (P≤0.05) in prolactin concentrations compared to women with dysmenorrhea and healthy.

Table (3) Comparison of dysmenorrhea and secondary amenorrhea in concentrations of prolactin

Hormones	Mean ± Standard division		
	Dysmenorrhea 30	Secondary amenorrhea 30	Control 30
Prolactin ng/ml	b 20.92 ± 14.36	a 20.72 ± 29.78	b 8.53 ±20.54

Horizontal letters means significant differences at the level (p ≤0. 01.), (p≤ 0.05).

Our results were consistent with the findings from [8] when measuring milk hormone in women with secondary amenorrhea Because of polycystic ovary syndrome, a significant increase was found in comparison to the serum. The reason is that prolactin inhibits the effectiveness of the aromatase of the granulosa cells thus supporting the concept of prolactin and its role in curbing follicular maturity [26]. The high level of prolactin in the blood can stimulate the adrenal gland to secrete (DHEA-S) dehydroepiandrosterone, which is one of the Androgens types, which rises in the case of PCOS. [27].

Comparison of the effect of changes in progesterone.

Table (4) shows that Women with secondary amenorrhea significantly increased (p <.001) compared with women with dysmenorrhea and control in the concentration of progesterone. No significant differences were observed among women with dysmenorrhea and healthy women.

Table (4) Comparison of dysmenorrhea and secondary amenorrhea in concentrations of progesterone

Hormones	Mean ± Standard division		
	Dysmenorrhea 30	Secondary amenorrhea 30	Control 30
Progesterone ng/ml	b 1.61 ± 0.883	a 3.63 ± 2.798	b 1.23 ± 0.60

Horizontal letters means significant differences at the level (p ≤0. 01.), (p≤ 0.05).

The results for women with dysmenorrhea were consistent with what was indicated by [10] when compared with women with dysmenorrhea with serum in the concentrations of Progesterone. Where no significant differences were attributed to the reason that these mechanisms are organized mainly

by under the hypothalamus, and pituitary glands. Results were also consistent with findings of [28]. While treating dysmenorrhea by yoga to relieve the pain resulting from primary dysmenorrhea, we did not find a significant difference between dysmenorrhea and control and that the treatment is done only by hormonal control. The cause of the pain during the menstrual cycle is the increase in the hormone prostaglandin, which is located in large concentrations of menstrual fluids, which is the cause of pain because it works on the tightness of the strong and powerful blood vessels and thus cause ischemia in the uterus, and the decline of progesterone cause increased production of prostaglandin. . Reduction of the concentration of progesterone causes the increase of muscle contraction of the uterus, which gives more pressure on the muscle of the uterus and intensification of pain resulting from dysmenorrhea. [29] The pain of dysmenorrhea comes from the increase of muscle contraction of the uterus, and stress and mental disorders tend to enhance and stimulate the sense of pain and the nervous system is responsible of these changes. Stress is the main factor related to dysmenorrhea and stress inhibits the release of follicle stimulating hormone (FSH) and the hormone Lutein (LH), which leads to poor development of the patient.

Progesterone production is also increased in luteinizing follicle after ovulation, and tension caused by poor graft development can reduce progesterone synthesis [30].

Comparison of the effect in estrogen changes

Table (5) shows significant differences (p≤0. 01.) in secondary amenorrhea compared to dysmenorrhea in the concentration of estrogen. The results of women with dysmenorrhea were inconsistent with the findings of [10] significant differences were found when comparing women with dysmenorrhea with the healthy in the concentrations of E2, where it was the highest rise in the late stage of the follicular phase and attributed the reason that these mechanisms are organized mainly through Hypothalamus and pituitary gland. The effect of oxytocin on the non-pregnant uterus appears to be more important than previously thought.

Table (5) Comparison of dysmenorrhea and secondary amenorrhea in concentrations of Estrogen

Hormones	Mean ± Standard division		
	Dysmenorrhea 30	Secondary amenorrhea 30	Control 30
Estrogen pg/ml	b 140.42±15.53	a 184.93 ± 28.43	b 18.71 ± 88.15

Horizontal letters means significant differences at the level (p ≤0. 01.), (p≤ 0.05).

The results were consistent with those indicated by [31,32,11]. The results of E2 concentration in patients with secondary amenorrhea showed that the patients had a decrease in the concentration of the hormone and this result was not identical with the studies and research suggesting that E2 decreases concurrently with both LH and FSH and low progesterone, and this is evidence of women's early ovarian disability suffered by most secondary amenorrhea patients. The results were consistent with studies showing that women who took hormone-containing Progesterone drugs had a deficiency in the concentration of E2.

Comparison of the effect of changes in testosterone

Table (6) showed differences in women who suffered from secondary amenorrhea significantly (p≤0. 01.) in serum lipid concentration compared to women with dysmenorrhea and healthy. Also, there was a significant increase (P≤0.05) for women with dysmenorrhea. The results of our study were consistent with what was indicated by (33) when studying some hormones in women with polycystic ovaries and found a significant increase in the hormone testicular lipid hormone and the results were consistent with the study [34] explained that the rise of total testosterone is the main reason to increase of androgen and that varying levels of progesterone and testosterone are present in women with PCOS. It is more common to observe normal elevation or elevation of the testosterone line in women with PCOS [34].

Table (6) Comparison of dysmenorrhea and secondary amenorrhea in concentrations of Testosterone

Hormones	Mean ± Standard division		
	Dysmenorrhea 30	Secondary amenorrhea 30	Control 30
Testosterone ng/ml	b 0.847±0.30	a 1.378 ± 0.60	b 0.26 ± 0.484

Horizontal letters means significant differences at the level (p ≤0. 01.), (p≤ 0.05).

Our results have also been found to be identical to [19] which found a Significant differences were found in testosterone hormone when studied in women with polycystic ovary syndrome and women who Chronic ovarian failure is attributed to the reason that the increased level of testosterone as compared to serum cortisol metabolism and regeneration of inactive glucocorticoids may have been disrupted in PCOS and thus contribute adrenal in determining hyper androgenic status increased adrenal androgen secretion in the case of PCOS is usually activated by amplification of CRH-ACTH secretion, by shrinking cortisol reactions by increasing cortisol metabolism [35]. This is consistent with the increase in adipose lipids in studies of [36,37]. These results were consistent with [11,20]. There was a significant difference in the level of testosterone concentration in secondary amenorrhea women when compared with control group, The reason for the high level of testosterone in patients and high morbidity (P <0.01) is due to the presence of polycystic ovaries in patients and this is confirmed by research and global studies mention that the male hormone was the cause of secondary amenorrhea in patients (40-50%) because Polycystic ovarian injury [38,39], and many researches and studies confirm that the condition of

hair is back to high male hormone where this condition is synchronized in cases of polycystic ovaries [40,13].

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مقارنة تأثير عسر الطمث وانقطاع الطمث الثانوي في تراكيز بعض المعايير الكيموحيوية والهرمونية لدى النساء في مدينة تكريت

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الملخص

جرت هذه الدراسة في مستشفى صلاح الدين العام في مدينة تكريت للفترة من تشرين الثاني 2017 ولغاية الشهر السادس 2018 لمقارنة تأثير اضطرابات عسر الطمث وانقطاع الطمث الثانوي في تراكيز سكر الدم والكولسترول وبعض الهرمونات FSH , LH , PRL, Progesterone , Estrogen , Testosterone لدى النساء في مدينة تكريت. بلغ عدد النساء المصابات بعسر الطمث وانقطاع الطمث والسليمات (30) أمرأه بكل مجموعة على التوالي. جرى سحب (5) مل دم من الوريد العضدي لجميع النساء اللاتي شملتهن الدراسة ثم جرى فصل مصل الدم بالطرق المختبرية الشائعة. وكانت النتائج عدم وجود فروق معنوية بين جميع مجاميع الدراسة في تراكيز سكر الدم بينما تفوقت النساء المصابات بعسر الطمث وانقطاع الطمث معنويا ($P\leq 0.05$) في تراكيز الكولسترول بالمقارنة مع مجموعة السليمات وكذلك تفوقا معنويا ($P\leq 0.01$) للنساء المصابات بانقطاع الطمث الثانوي في هرمونات FSH , LH , PRL , Progesterone , E2 , Testosterone بالمقارنة مع مجموعة النساء المصابات بعسر الطمث ومجموعة السليمات. تفوقت مجموعة النساء المصابات بعسر الطمث معنويا ($P\leq 0.05$) في تراكيز هرمونات Progesterone Testosterone بالمقارنة مع مجموعة النساء السليمات. تفوق النساء المصابات بعسر الطمث والنساء السليمات معنويا ($P\leq 0.05$) في تراكيز هرمون FSH بالمقارنة مع نساء عسر الطمث. يستنتج أن انقطاع الطمث الثانوي أكثر تأثيرا في زيادة تراكيز الهرمونات التي تمنع حدوث عملية التبويض بالمقارنة مع عسر الطمث.