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Research Article

HORMONAL CHANGES IN WOMEN IN MENOPAUSE PERIOD

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Abstract:

The time in a woman's life when menstrual periods permanently stop; it is also called the "change of life." Menopause is defined as the time when there has been no menstrual periods for 12 consecutive months and no other biological or physiological cause can be identified. It is the end of fertility, the end of the childbearing years. (A woman may still, however, be able to become pregnant unless 12 consecutive months have passed without a period.) The last several weeks, this blog has discussed hormones during the reproductive cycle as well as neuro-endo connections (e.g. serotonin, estradiol, dopamine, progesterone). Around age 38 the ovarian reserve declines rapidly significantly decreasing fertility. At this point, there are far fewer follicles that can be recruited and, as a result, less egg maturation and release. This ovarian depletion results in hormonal fluctuation. All of this eventually leads up to a woman's final menstrual period, which is on average around age 51. The first hormone to begin decreasing during perimenopause is progesterone. As the number of follicles decreases, ovulation and the resulting corpus luteum formulation occurs less frequently. This significantly decreases the amount of progesterone produced. As progesterone levels begin to fall, gonadotropin releasing hormone (GnRH) increases, and as a result, follicle stimulating hormone (FSH) increases in an attempt to recruit a follicle. At the onset of menopause, when ovarian reserve is almost completely diminished, estradiol levels decrease dramatically and estrogen becomes the most abundant type of estrogen in the body.

Key words: *Hormone Decreasing, Menopause Period, Estradiol, Progesterone Lh, Fsh, Vitamin D Levels.*

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INTRODUCTION:

There are several points during the female life cycle when a woman's physiological rhythm changes. The female hormone estrogen has a great deal to do with the physical changes that occur at these points the onset of menstruation, pregnancy, childbirth and menopause. Hormones secreted by the ovaries bring about the changes in the female body that come with puberty marked by the beginning of the menstrual cycle, and then sexual maturity, when a woman is able to get pregnant and give birth.[1]

Specifically, the change in estrogen concentration in the blood is closely related to life cycle. After adolescence, the concentration peaks as the body reaches sexual maturity and then decreases significantly during menopause.[2] In late reproductive life, menopause occurs after 12 months of amenorrhea and represents the near complete cessation of ovarian hormone secretion. The median age at menopause is 51.4 [3]. The menopausal transition refers to the time in each woman's reproductive life that precedes the final menstrual period and is associated with changes in bleeding pattern and hormone profiles. Underlying these changes in bleeding pattern and hormonal profiles is the depletion of ovarian follicles. On average, women spend 4 years in menopausal transition, but there is considerable variability in length of menopausal transition.[4]

Efforts to study these endocrinologic changes help to elucidate the biology of late reproductive aging, specifically ovarian aging. Further, hormone biomarkers that can identify timing of stages of reproductive aging, including predicting the final menstrual period, would have extensive clinical application.[5] The purpose of this report is to review the literature on hormonal changes associated with the menopausal transition.

Several hormones in the hypothalamic-pituitary-ovarian axis are markers of ovarian aging, including FSH, estradiol, inhibin B and AMH. FSH is secreted by the anterior pituitary gonadotrophes and is regulated in part through negative feedback by inhibin B and estradiol, hence an "indirect measure".[6] As inhibin B and estradiol vary through each menstrual cycle, FSH levels fluctuate accordingly. With ovarian aging, lower inhibin B also results in decreased negative feedback to the pituitary, resulting in increased FSH secretion and higher early follicular FSH.[7]

Hormones are the messengers in the body that travel through the blood stream to start, stop, speed up or

slow down your physical and chemical functions and processes across all body systems.[8] Your ovaries are the source of estrogen and progesterone, the two key hormones that control the reproductive system, including the menstrual cycle and fertility in women. You are born with all the eggs you will ever have. [9] The eggs are in the follicles, which are found in the ovaries. During menopause, the number of ovarian follicles declines and the ovaries become less responsive to the two other hormones involved in reproduction Luteinizing Hormone (LH) and Follicle-Stimulating Hormone (FSH). As your ovaries age and release fewer hormones, FSH and LH can no longer perform their usual functions to regulate your estrogen, progesterone and testosterone.[10]

MATERIALS AND METHODS:

The method of determination of hormonal status including in the research we use method of Vidas(Immunoasaay fluorescent test) for determination of hormone levels. In this research are taking the work of total of 10 years from 2009-2019 from Clinical Hospital in Skopje and Clinical Hospital in Tetovo, Republic of North Macedonia. The patients was taking for determination of hormonal status in different period of menopause. In total group of 410 patients separated in different age groups. The first age groups from 1-10 years total of 20 patients, second age group from 11-20 years total of 20 patients, third age group from 21-30 years total of 20 patients, fourth age group from 31-40 total of 150 patients, fifth age group from 41-50 years total of 150 patients, sixth age group from 51-70 years total of 50 patients.

We take samples of blood vein for analyzed the type of hormones and blood is mostly taken from the cubic vein or any other available vein. At the beginning the arm is connected and then disinfected with the wad of alcohol the chosen vein and bristled with the needle thread. Depending on what tests are required for plasma serum or blood elements, we can detect corneal (dry) and anti-coagulant

- For serum we need dried herbs
- For plasma - anticoagulant tubes
- For blood elements - anticoagulant tubes

After the serum blood serum collection the centrifuge is centrifuged in the centrifuge rotations per minute lasts 5 to 10 minutes. While plasma and blood elements, respectively with anticoagulants, should be carefully mixed from one side to the other, so that the blood components are not hemolytic.

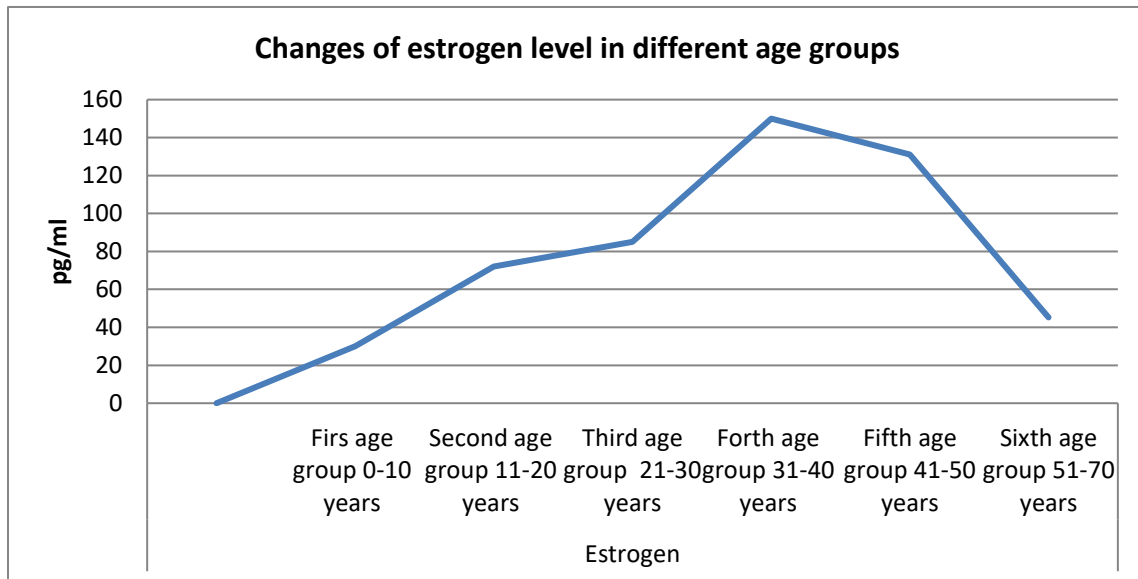


Figure.1. The procedure of drawing blood for analyses<http://www.dailymail.co.uk/news/article-2783675/Meet-college-dropout-self-billionaire-fear-needles-inspired-invent-neë-ëay-test-blood.html>

RESULTS:

In this research we have women in different periods examined and determinate the level of hormones in before and after menopause. In total group of 410 patients separated in different age groups. The first age groups from 1-10 years total of 20 patients, second age group from 11-20 years total of 20 patients, third age group from 21-30 years total of 20

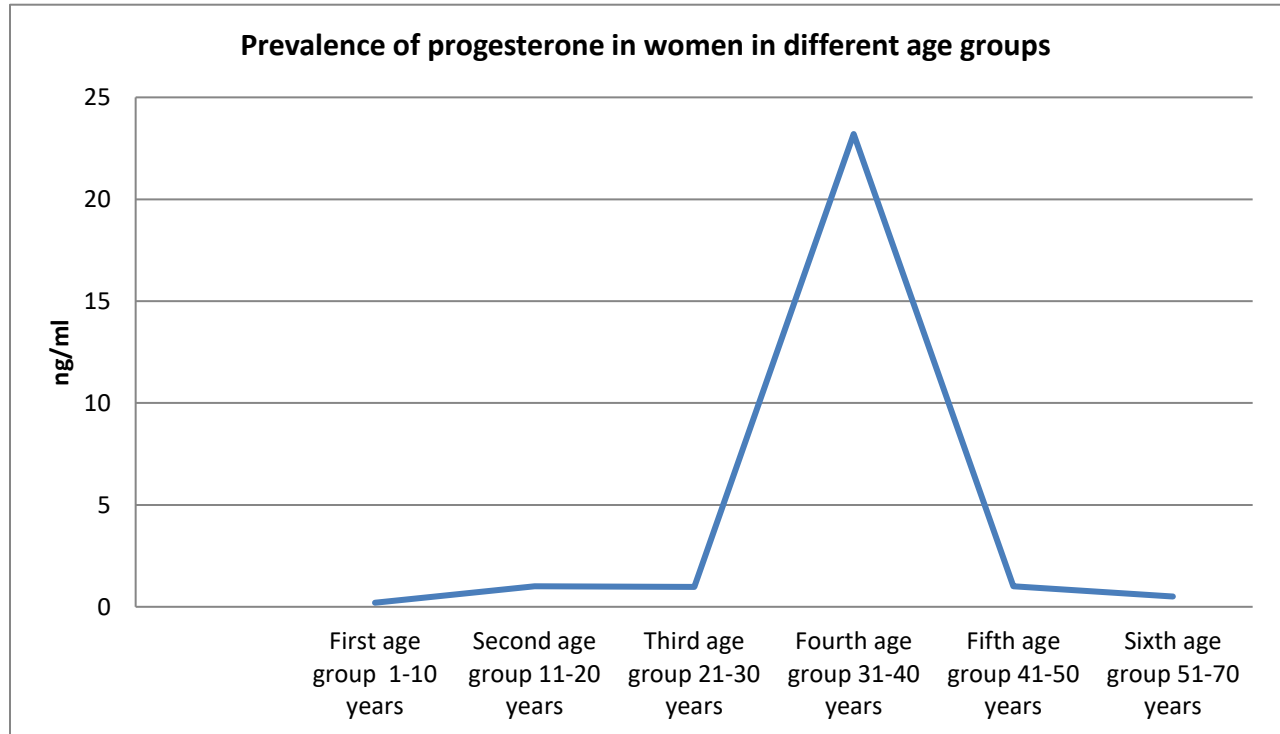
patients, fourth age group from 31-40 total of 150 patients, fifth age group from 41-50 years total of 150 patients, sixth age group from 51-70 years total of 50 patients. In this age groups was determinate the level of hormones such as estrogen, progesterone, LH, FSH and vitamin D. These hormones have a major indication in different periods of perimenopause, menopause and post menopause.



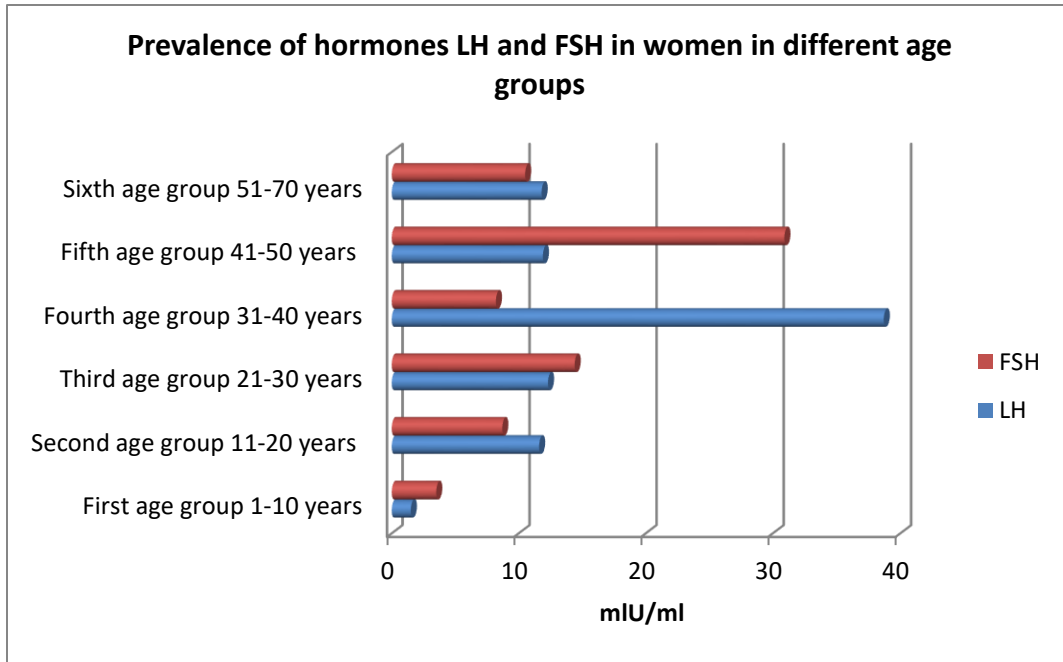
Graph.1. Changes of estrogen level in different age groups

Table.1. Prevalence of progesterone, LH and FSH in different age groups

Different age groups	Progesterone ng/ml	LH mIU/ml	FSH mIU/ml
First age group 1-11 years	0.2 ng/ml	1.5 mIU/ml	3.5 mIU/ml
Second age group 11-20 years	1 ng/ml	11.6 mIU/ml	8.7 mIU/ml
Third age group 21-30 years	0.98 ng/ml	12.3 mIU/ml	14.4 mIU/ml
Fourth age group 31-40 years	23.2 ng/ml	38.7 mIU/ml	8.2 mIU/ml
Fifth age group 41-50 years	1 ng/ml	11.9 mIU/ml	30.9 mIU/ml
Sixth age group 51-70 years	0.5 ng/ml	39.8 mIU/ml	52.4 mIU/ml

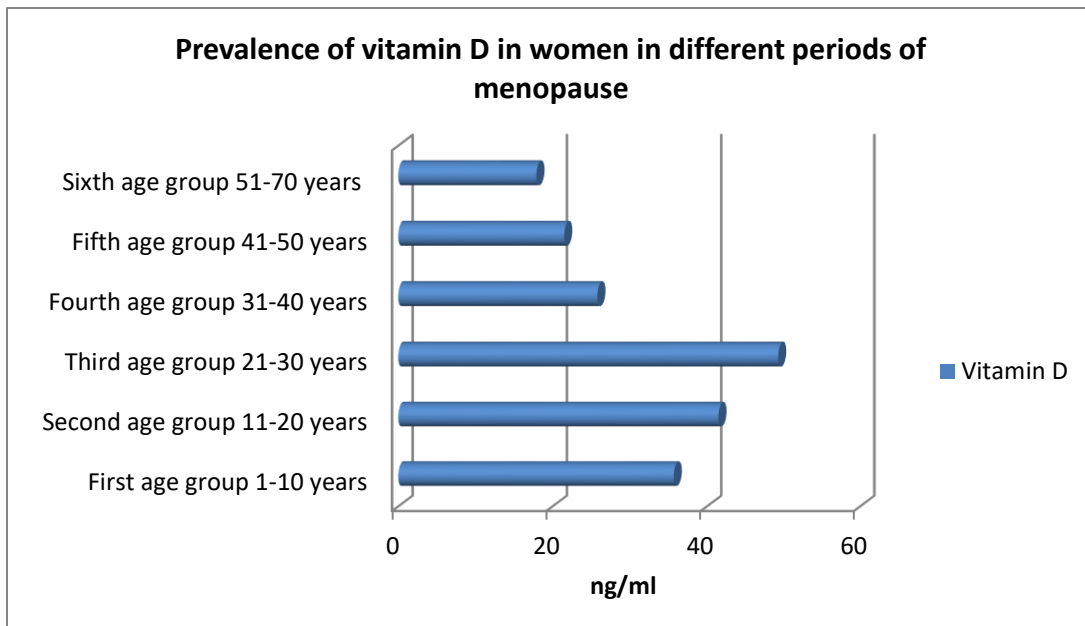
**Graph.2. The prevalence of progesterone in women in different age groups**

Women in different periods and stages the level of progesterone can be changed in postmenopausal period. The highest level of progesterone hormone is in women during 31-40 years and the level of this hormone is decreased in age group 41-50 and from 51-70 years.



Graph.3. Prevalence of hormones LH and FSH in women in different age groups

The prevalence of hormones LH and FSH in women in different age groups in different periods of menopause. The fourth age group has the prevalence of having a highest level of hormones before their menopause period.



Graph.4. Prevalence of vitamin D in women in different periods of menopause

From the results obtained in different periods in women health, we see a decreased in vitamin D in the age group of 41-50 years and 51-70 of vitamin D, which is also affected by hormonal changes with estrogen reduction and the appearance of other health problems osteoporosis and the metabolism of calcium and phosphorus.

Table.2. Percentage of lifetime disorders in male and female

Disorder	Lifetime disorders		
	Women (%)	Men (%)	Odds ratio
Depression	22.9	13.1	1.46 (1.41-1.51)
Dysthymia	6.2	3.5	1.31 (1.25-1.38)
Generalized anxiety	5.8	3.1	1.34 (1.27-1.42)
Panic disorder	7.2	3.7	1.39 (1.32-1.47)
Social phobia	5.8	4.3	1.16 (1.10 – 1.22)
Specific phobia	12.4	6.2	1.47 (1.41 – 1.53)
Alcohol dependence	8.0	17.4	0.63 (0.60-0.65)
Nicotine dependence	15.6	20.0	0.84 (0.81- 0.87)
Marijuana dependence	0.9	1.7	0.77 (0.71 – 0.83)
Other drug dependence	1.4	2.2	0.84 (0.79- 0.90)
Antisocial personality	1.9	5.5	0.68 (0.59- 0.66)

These interactions demonstrate that the nervous and endocrine systems are intricately coupled, and both are involved in almost every bodily function including cognition, mood, reproduction, sleep, and temperature regulation. The correct balance of neurotransmitters and hormones is critical to preventing symptoms, as well as supporting overall health.

DISCUSSION AND CONCLUSION:

From the results obtained in different periods in women health, we see a decreased in vitamin D in the age group of 41-50 years and 51-70 of vitamin D, which is also affected by hormonal changes. Period-menopausal in women age groups according to results obtained starting from 38.5 years to 51.8 years and ends. Hormones are chemicals that are produced by glands in the endocrine system. Hormones travel

through the bloodstream to the tissues and organs, delivering messages that tell the organs what to do and when to do it. Hormones are important for regulating most major bodily processes, so a hormonal imbalance can affect a wide range of bodily functions. Hormones help to regulate:

- metabolism and appetite
- heart rate
- sleep cycles
- reproductive cycles and sexual function
- general growth and development
- mood and stress levels
- body temperature

Men and women alike can be affected by imbalances in insulin, steroids, growth hormones, and adrenaline. Women may also experience imbalances in estrogen and progesterone levels, while men are more likely to experience imbalances in testosterone levels.

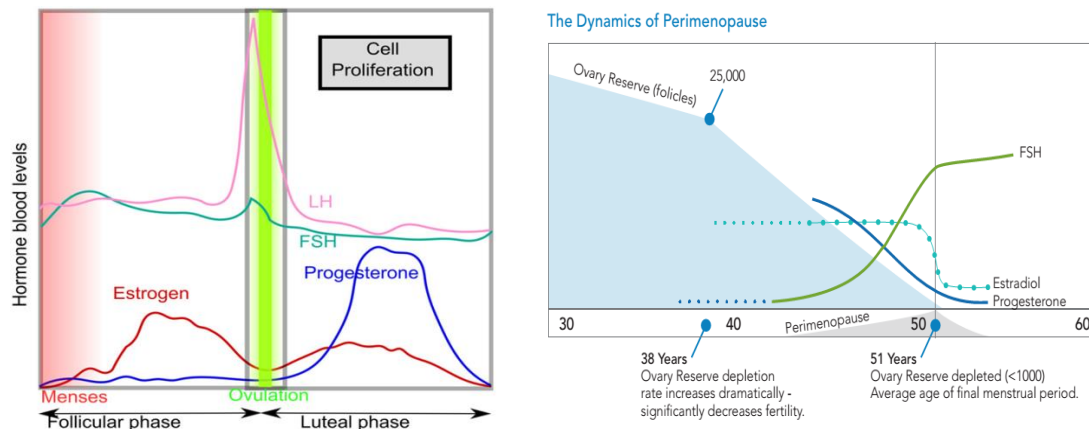


Figure.2.a) The human menstrual cycle) The dynamics of perimenopause(<https://neuroendoimmune.wordpress.com/2013/12/03/hormonal-changes-in-menopause-is-it-all-downhill-from-here/>)

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