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Prevalence of the Polycystic Ovary Syndrome in Unselected Women from Benghazi- Libya

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Abstract: I estimated the prevalence of the polycystic ovary syndrome (PCOS), as defined by the NIH/NICHHD 1990 endocrine criteria, in a population of 582 Libyan women of reproductive age reporting spontaneously in a genecology and obstetric outpatient clinic.

PCOS was defined by the presence of 1) oligomenorrhea, 2) clinical and/or biochemical hyperandrogenism, and 3) exclusion of hyperprolactinemia, thyroid disorders,. Hirsutism and acne was considered as a sign of hyperandrogenism when persistent after the second decade of life, and hyperandrogenemia was defined by an increase in circulating testosterone.

PCOS was present in (7.044%), hirsutism was present in (56%), and acne was present in (33%) of the582 women. The results demonstrate a 7.044%   prevalence of PCOS, as defined, in a minimally biased population of Libyan women from Benghazi. The polycystic ovary syndrome, hirsutism, and acne are common endocrine disorders in women.

1-Introduction

1.1 Polycystic ovary syndrome (PCOS): appears to be one of the most common endocrine disorders of women. it is the most common cause of unovulatory infertility (related to the absence of ovulation), affecting an estimated 100 million women of childbearing age worldwide[1].

1.1.2: In addition to infertility, PCOS includes other symptoms, such as fluid-filled sacs or cysts on one or both ovaries, hormone imbalances, skin problems, and excess hair growth. It is also associated with conditions such as insulin resistance and obesity. Although the condition is most often diagnosed in women between the ages of 18 and 44, research suggests that features of PCOS are present before a girl has her first period.It is associated with significant reproductive, endocrine, metabolic, and cardiovascular, morbidity[1].

1.2:infertility: Infertility is "a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse, Infertility is considered as a major health care problem of different communities. The high prevalence of this issue doubled its importance, The average prevalence of infertility in developed countries is 3.5-16.7% and in developing countries is 6.9-9.3%,Menstrual and ovulation dysfunction and uterine factors are the most common causes of impairment in fertility, Polycystic ovary syndrome accounts for more than 75% of cases of anovulatory infertility[2].

1.2.1: classification of infertility: infertility can be classified as a male and female infertility, Infertility affects an estimated 15% of couples globally, amounting to 48.5 million couples. Males are found to be solely responsible for 20-30% of infertility cases[2]**.**

1.2.2: male infertility: 40–50% of male infertility is due to "male factor" Males with sperm parameters below the WHO normal values are considered to have male factor infertility. The most significant of these are low sperm concentration (oligospermia), poor sperm motility (asthenospermia), and abnormal sperm morphology (teratospermia). Other factors less well associated with infertility include semen volume and other seminal markers of epididymal, prostatic, and seminal vesicle function[2]**.**

1.2.3: female infertility: Female infertility factors contribute to approximately 50% of all infertility cases, and female infertility alone accounts for approximately one-third of all infertility cases**,** The most common causes of female infertility include problems with ovulation, damage to fallopian tubes or uterus, or problems with the cervix. Age can contribute to infertility because as a woman ages, her fertility naturally tends to decrease[2].

1.2.4: Role of POCS in reproductive health: PCOS is the most common cause of anovulatory infertility; ∼ 90–95% of anovulatory women, Most women with PCOS have elevated levels of luteinizing hormone and

reduced levels of follicle-stimulating hormone (FSH), coupled with elevated levels of androgens and insulin. These imbalances can manifest as oligomenorrhea or amenorrhea. Underproduction of estrogen and overproduction of androgens by the ovaries can result in a number of additional clinical features, including tiny cysts on the surface of the ovaries (polycysts) and hair and skin symptoms. Women with PCOS who become pregnant are at higher risk than those without PCOS of developing gestational diabetes mellitus or suffering a first-trimester spontaneous abortion.

1.2.5: Mechanism of Anovulation in PCOS: The mechanism of anovulation in PCOS remains unclear, but there is evidence that the arrested antral follicle growth that is typical of anovulatory women with PCOS reflects the abnormal endocrine environment. The granulosa cells of these follicles appear to acquire responsiveness to LH at a much smaller size than in the normal cycle (typically 3–4 mm in diameter compared with 10 mm in the normal dominant follicle).They produce inappropriate levels of estradiol (and progesterone) for their size, and we suggest that they suppress endogenous FSH levels, There is evidence for an intrinsic abnormality in the early development of follicles in the polycystic ovary and that may contribute to abnormal follicle maturation, but we propose that the abnormal endocrine environment is the main reason for arrested antral follicle development.

2- Aim of the work:

The objective of this work is to report on the prevalence of polycystic ovary disease among unselected women in Benghazi city.

3-Material and methods:

  This study was performed at different outpatient clinic(OPD) in Benghazi city, It included 1054 patient

(age= 18-40, n= 1054) the data were collected during the second of February until the third of May 2018 At present, the diagnosis of PCOS is usually based on the criteria derived from the 1990 NIH/NICHHD conference[1], menstrual dysfunction, clinical hyperandrogenism (hirsutism, acne, androgenic alopecia) and/or hyperandrogenemia, and exclusion of other related disorders, such as hyperprolactinemia, nonclassic adrenal hyperplasia, or thyroid disease.

The study population consisted of Libyan female patient who presented to the gynecology and obstetrics (OPD) . The presence of hirsutism was scored in every woman, using a modification of the Ferriman-Gallwey method[2], quantitating the presence of terminal hairs over body areas (upper lip, chin, upper and lower abdomen). The presence or absence of acne and androgenic alopecia was recorded, and the weight were measured.

A history form was completed, including menstrual dating and irregularity, hirsutism and acne, reproductive history, gynecological history, use of medication including oral contraceptive pills, and family history of male pattern premature baldness. Women with past symptoms of hypoestrogenism such as hot flushes and vaginal dryness, emotional lability, and menstrual abnormalities in a woman older than 45 years were excluded from the report. None of the subjects was younger than 18 years old.

this study was approved by Doctor *Hanan M. ELfaituri* a consultant in gynecology and obstetrics department, and by the direct consent of the participants whom were included in this report.

3.1 Hormonal analysis: As indicated, serum samples were analyzed for Total prolactin, luteinizing hormone(LH), follicular stimulating hormone (FSH),and estradiol(E2).

3.2 Criteria for the definition of PCOS: As stated above, PCOS was defined by the presence of 1)menstrual dysfunction, 2)clinical hyperandrogenism and/or hyperandrogenemia, and 3) exclusion of other disorders. Menstrual dysfunction was considered when the women had oligomenorrhea, Clinical hyperandrogenism was defined by the presence of hirsutism, represented by a hirsutism score of 8 or more,

persistence of acne during the third decade of life or later, or the presence of androgenic alopecia. No attempts were made to grade the severity of acne or alopecia.

4- Results: One thousand and fifty four women agreed to participate in the study. Clinical variables were evaluated in 582 of them, the others were excluded either because they came to the outpatient clinic for pregnancy follow-up of they were above/below the age clinical variables included hirsutism scores and menstrual history, and women serum samples were also obtained.(n=23;56%)showed a hirsitism, None of the other subjects had a history of treated hirsutism. Persistence of acne after the second decade of life was found in women (n=19;46.33%) None of the women had androgenic alopecia, twenty on the women (n=20;48%)had oligomenorrhea, Thirteen women(n=13;31.08%) were infertile, while(n=8;19.51%)where suffering from supfertility. However, hyperprolactinemia defined by serum prolactin more than 24μ g/L, which was defined in (n=12;29.29%) of women, according to this results and the diagnostic criteria of PCOS, polycystic ovary syndrome was sustained in only 40 of the 582 subjects studied nearly (7.044%)of the examined population. Further, none of these patients had abnormal serum TSH levels (0.27- 4.2 ulU/ml) ruling out thyroid dysfunction.

5- discussion: Although PCOS is believed to be one of the most common endocrine disorders of women, there are very few data regarding its prevalence in the female population. As stated above, the present endocrine definition of PCOS is based on several criteria, accepted by the NIH/NICHHD, other recent recent studies estimating the prevalence of PCOS using these criteria. Knochenhauer et al. reported an overall 4.0% prevalence of PCOS in women from the U.S. (4.7% in White women and 3.4% in Black women), and Diamanti-Kandarakis et al. reported a 6.8% prevalence of PCOS in the Greek island of Lesbos.

My report share many characteristics with that by Knochenhauer *et al* and Miryam Asunción *et al* studies allowing direct comparison between their results and my present findings. Considering that all of the women who entered my present report were Caucasian, the size of the sample i studied was similar to the number of White women included in the study from Knochenhauer *et al.* and to the number of patient Miryam Asunción *et al* used on its study and both was adequate to estimate the prevalence of PCOS as previously discussed.

Minor differences may explain the slightly higher prevalence of PCOS found in Benghazi (7.044%) compared to Spain (6.5%) and to White women from Alabama (4.7%). Miryam Asunción *et al* and I defined clinical hyperandrogenism by the presence of hirsutism and acne, whereas Knochenhauer *et al.* only considered hirsutism for the diagnosis of PCOS. the inclusion of acne as a sign of hyperandrogenism would have increased the prevalence of PCOS in White women to 5.4%. Further, I used easy criteria for the definition of oligomenorrhea in this report , which might be responsible for the 1% and 3% increase in the prevalence of PCOS in Spain and while women of Alabama respectively.

6- conclusion: In conclusion, we found a 7.044% prevalence of PCOS among Libyan women in Benghazi , as defined by the criteria derived from the NIH/NICHHD-sponsored conference in 1990, in a minimally biased population of women from Benghazi/Libya . PCOS and hirsutism are common endocrine disorders in women, especially at younger ages from 29-31 years.

Although PCOS is a complex heterogeneous disorder present with a spectrum of diverse phenotypes, it seems that even in different populations and countries with varying genotypic and phenotypic characteristics, agreement on the definition of the syndrome eliminates an important source of variation in prevalence estimates and gives rise to almost consistent results.

References:

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