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A Review and a Brief Explanation of the Poly Cystic Ovarian Syndrome

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Abstract - A complicated disorder known as polycystic ovarian syndrome (PCOS) is typified by high testosterone levels, irregular menstruation, and/or tiny cysts on one or both ovaries. According to a study, PCOS is the most common endocrine disorder among women of reproductive age, affecting 5% to 10% of females between the ages of 18 and 44. Poor dietary choices, physical inactivity, and elevated environmental factors have been related to PCOS, including obesity; infectious agents and toxins may also play a role. Although there is currently no pharmaceutical treatment for the illness, several interventive drugs are utilized to alleviate PCOS's clinical symptoms. Early detection of long-term morbidities through appropriate screening and testing is an essential part of the treatment of this disorder.

***Key Words*:** PCOS, hormones, vitamins

1. INTRODUCTION

A complicated disorder known as polycystic ovarian syndrome (PCOS) is typified by high testosterone levels, irregular menstruation, and/or tiny cysts on one or both ovaries.[1] The condition may be primarily biochemical (hyperandrogenemia) or morphological (polycystic ovaries). One of the clinical features of PCOS is hyperandrogenism, which can lead to anovulation, microcysts in the ovaries, follicular development suppression, and menstrual abnormalities.[2] The regular menstrual cycle is disrupted by disturbances in reproductive hormones such as LH, FSH, estrogen, and testosterone, which can result in irregularities similar to amenorrhoea and oligomenorrhea.[3] According to a study, PCOS is the most common endocrine disorder among women of reproductive age, affecting 5% to 10% of females between the ages of 18 and 44.[4] In 2012, 116 million women worldwide suffered from PCOS, according to the World Health Organization (WHO). The global prevalence of PCOS varies significantly; estimates range from 2.2% to 26%. The reproductive capacity and survival of the species ultimately rest on the female hypothalamic-pituitary-ovarian (HPO) axis, a delicately controlled and coordinated network. The HPO axis reacts to hormonal and neuronal cues that come from the outside world or environmental stimuli. These variables start to affect developing brains and germ cells during pregnancy, and they affect subsequent generations through epigenetic mechanisms.[5]

2. SYMPTOMS:

1. Women with PCOS may have seen thinning hair on their heads, which may have gotten worse as they grew older.

2. PCOS can cause oily skin and acne due to hormonal fluctuations in people who are prone to acne.

3. Skin discoloration can be observed with thick, black, velvety patches of skin behind arms or breasts, on the back of the neck, and inside the groin area. Acanthosis nigricans is the term used to describe this disorder.

4. Constant lack of sleep can cause persistent feelings of exhaustion and can cause constant tiredness due to insomnia. Having trouble sleeping is also accompanied by the possibility of experiencing sleep apnea.

5. Headaches can also be caused by the elevated levels of hormones that lead to the development of PCOS. A prolonged duration of stress can lead to significant changes in PCOS. It can lead to significant abnormalities in the menstrual cycle, including irregular periods and heavy bleeding. Those periods that are not regular. It is possible that you won't have the period or miss a few months.

6. Being unable to conceive can be challenging when trying to become pregnant without having certain conditions in place. Irregular menstrual cycles are a common cause of infertility, and one of the main culprits is Polycystic Ovary Syndrome (PCOS).

7. Gaining weight is a common struggle for approximately 50% of women with PCOS. It may contribute to a significant weight gain. The quantity of excess weight can also worsen PCOS. Losing a few pounds may be beneficial in bringing back the periods. Losing weight will assist in maintaining healthy cholesterol and blood levels. For PCOS, it is important to have both vital levels of sugar and blood sugar levels.[6]

8. The development of terminal hair in an adult male distribution in women is called hirsutism. Excess facial hair, chest hair between the breasts, and lower abdominal hair are common manifestations.[7]

9. Androgenic alopecia is the term used to characterize the progressive pattern of scalp terminal hair loss that is more common in men with baldness and considerably less common in women, however, it is likely underdiagnosed in PCOS patients.[8]

PCOS is an oligogenic condition associated with phenotypic, clinical, and biochemical phenotypes driven by the interaction between hereditary and environmental variables.[9]
Even though the genetic cause of PCOS is unknown, it is rather normal to have a family history of the disorder; nonetheless, the familial linkages to PCOS are unknown. Formal segregation is impossible to analyze since there are insufficient phenotypic data. Despite this, a recent study indicates that PCOS clustering in families is comparable to the autosomal dominant pattern.[10]

Poor dietary choices, physical inactivity, and elevated environmental factors have been related to PCOS, including obesity; infectious agents and toxins may also play a role. Changes in lifestyle, such as exercise and weight loss, can sometimes cause the metabolic and reproductive aspects of PCOS to revert.[11]

3.COMPLICATIONS:

Early difficulties:

Infertility: As per the earlier definition, infertility was one of the key symptoms linked to PCOS. PCOS is the most prevalent cause of ovulatory disruption, according to epidemiologic data. Additionally, oligoanovulation is linked to an increased risk of infertility.[12]

Problems during pregnancy: It has long been believed that PCOS is a syndrome linked to ovulatory infertility.Particularly now that the updated diagnostic criteria have been made available. The emphasis has shifted to reproductive issues, particularly challenges related to childbirth. Additionally, comorbidities linked to the illness, such as obesity and/or IR, may have increased the risk of pregnancy.[13]

Long-term difficulties:

Heart-related health complications: Traditional CVD risk factors, such as hypertension, dyslipidemia, diabetes, obesity, and other diseases, are more common in women with PCOS than nontraditional risk factors, like homocysteine, C-reactive protein (CRP), and tumor necrosis factor. Elevated CVD risk indicators are linked to PCOS at any age; these markers can arise even in the absence of obesity but are aggravated by body fat.[14]

Risk associated with metabolic processes: Among the population of the world, obesity is a major and rapidly expanding epidemic disorder, especially among children and teenagers.Overweight (body mass index > 25 kg/m2) Obesity and diabetes (BMI > 30 kg/m2). There are more prevalent cases of PCOS among women than among healthy women; this accounts for up to 61 percent of the population. Even with the broad range of obesity, estimations of PCOS, women from all over the world, and different ethnic groups, there is the constant, central distribution of adipose tissue.[15]

Risk of Cancer: Because PCOS is a multisystemic, multidimensional, and lifetime condition, it can lead to changes in reproductive and metabolic processes that are associated with an increased risk of cancer, including endometrial, ovarian, and breast cancer, as well as recognized hormonal and/or metabolic pathogenetic processes. One of the potential routes that might have accelerated the onset of neoplastic illnesses in these women, particularly endometrial cancer, is the chronic anovulatory state, which leads to unopposed estrogen activity and is combined with hyperandrogenism.[16]

Nutrients required during PCOS

1. Vitamin B6 is necessary for the management of PCOS and helps maintain a healthy hormone system. This vitamin is found in almonds, wild rice, milk, yogurt, eggs, Brussels sprouts, spinach, and soybeans, among other foods.

2.Vitamins B2, B3, B5, and B6 are especially beneficial for managing weight.The ingredients that were found

were yeast, red meat, milk, eggs, beans, and green vegetables.

3. Vitamin B5: This vitamin helps with weight loss by controlling the metabolism of fat. This vitamin is found in beans, beef, eggs, yogurt, avocados, and meat.

4.Vitamin B6, when combined with vitamins B2 and B3, is necessary for the best thyroid hormone synthesis. This nutrient can be found in chicken, turkey, tuna, salmon, lentils, sunflower seeds, cheese, brown rice, and carrots.[17]

4.TREATMENT:

Medications and surgery to treat PCOD:

Although there is currently no pharmaceutical treatment for the illness, several interventive drugs are utilized to alleviate PCOS's clinical symptoms.[18]Treatment options include treating ovulatory dysfunction, reducing insulin resistance, treating hyperandrogenism, and treating infertility, depending on the clinical symptoms and underlying reason.[19] Medications like Combinatorial Birth Control pills. These pills contain progesterone and estrogen, which decrease the synthesis of male sex hormones and regulate hormones, allowing follicles to release the egg, causing acne and excessive hair growth. Progestin treatment to ensure that the menstrual cycle is regulated and corrected.
Treatment for immature hair follicles with aspiration for PCOS were treated to enhance endocrinology and reduce the number of follicles in the ovary, which makes pregnancy easier.
Medications like gonadotrophins, metformin, letrozole, and clomiphene to improve ovulation.

Although surgery is not one of the immediate options, in severe circumstances, laparoscopic ovarian drilling is conducted, which would aid in triggering ovulation and releasing the egg from the ovaries.

PCOD is treated with diet: Although there are numerous lifestyle guidelines and suggestions for women suffering from PCOD, you are urged to adhere to a diet that has a low fat and carbohydrate content. This would help you maintain a close eye on your weight and prevent any unexpected spikes in your blood sugar or blood pressure. Some of the foods that may be included are: Natural, unprocessed foods and leafy greens like spinach and kale. Foods strong in fiber, such as broccoli and cauliflower, nuts and legumes, fish, whole grains, and dairy products with low fat.[20]

Behavioural therapy : Self-efficacious behavioural therapies are encouraged by the 2018 PCOS guideline. These consist of problem-solving techniques, self-monitoring, stimuli control, relapse prevention, and the application of SMART (specific, measured, attainable, realistic, and timely) goals. [21]

To increase the sustainability of lifestyle changes, behavioural and cognitive interventions are needed. These must take into account not just the targeted activity but also its antecedents, repercussions, and cognitive processes.[22,23]

The women who lost more weight had higher social desirability and lower embitterment scores on a personality trait assessment measure [24], which makes sense given that women with PCOS exhibit higher rates of weight gain over time [25] and high attrition rates in clinical weight management research [26]. These results are especially noteworthy because they provide light on the significance of personality traits and how well they support successful behavioural changes.[24]

CONCLUSION:

Additional study is required to close the gap between the several susceptibility characteristics that could contribute to PCOS. Morbidities, which are more prevalent and represent the phenotype of frank PCOS, emphasize the disease's complexity as a syndrome, which impacts several biological systems, such as the endocrine, gynaecological, cardiac, and psychological systems. As the end consequence, the management of this complicated entity requires a multidisciplinary team with skilled and knowledgeable members to achieve the greatest patient outcomes possible. It's critical to keep in mind that PCOS therapy changes as patients age and should be determined by symptomatology. Early detection of long-term morbidities through appropriate screening and testing is an essential part of the treatment of this disorder. A vital part of the treatment strategy is a lifestyle change, which is highly advised.

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