

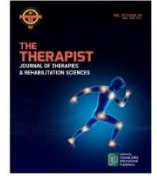


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Review Article

Polycystic Ovarian Syndrome in Female players

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ABSTRACT

Polycystic Ovarian Syndrome (PCOS) is quiet common gynecological disorders in recent times and has affected adversely the population. It causes infertility among females by disturbing the ovulatory process during menstruation. It impairs the female endocrine system and causes an increased level of male hormones. It has multiple etiologies such as genetic, environmental, life style but the pathogenesis is not clear. Molecular pathways and key players involved are yet ambiguous. It is polygenic with multiple etiologies and multiple symptoms. PCOS arise during puberty and a marked feature is insulin resistance. Awareness regarding PCOS among females is very less and they are unaware mostly about this condition. More researches are required for awareness regarding management of PCOS through life style modification such as diet, physical activity. Diagnosis and treatment should also be done timely at an early phase.

INTRODUCTION

Polycystic Ovary Syndrome (PCOS) is perhaps the most widely recognized endocrine issue in the females of reproductive age, influencing up to 20% of individuals in this populace. It is worth mentioning that PCOS is heterogeneous in nature; normal clinical and biochemical indications of this condition incorporate hyperandrogenism, menstrual dysfunction, and polycystic ovaries. The specific reason for PCOS isn't known till date. As per scientific examinations, it has all the earmarks of being a blend of three unique elements, including the genes, environment, and components like hormonal imbalance [1]. Current studies report the prevalence of female athletes who present with menstrual dysfunction to be higher than the general population. Menstrual dysfunction related to PCOS has been reported to be around 15%, but only a handful of studies have looked at PCOS prevalence in female athletes, indicating a need for more research in this area as reported [2]. Clinical health outcomes for females who are diagnosed with PCOS include increased risk for infertility, dysfunctional bleeding, endometrial cancer, obesity, type 2 diabetes, dyslipidemia, hypertension, and cardiovascular disease. Given that PCOS can result in many different clinical health outcomes, the proper diagnosis of PCOS is essential for knowing how to manage the symptoms and mitigate risk associated with the potential negative health and reproductive outcomes [3].

The clinical characteristics of PCOS are heterogeneous among diagnosed individuals, but each represents a disturbance in reproductive, endocrine, and metabolic function. These clinical manifestations include menstrual abnormalities, hirsutism, acne, alopecia, weight gain, and obesity. These females are also at risk of developing psychological problems. Long-term effects of the disease may lead to serious complications [4].

Menstrual Abnormalities

Menstrual dysfunction is one of the clinical characteristics associated with PCOS and is additionally seen in over-trained or under-fueled female athletes as reported [5]. Menstrual dysfunction is inconsistently defined in the literature and the prevalence of amenorrhea is reported to be 66% in female athletes [6]. In the PCOS population, menstrual dysfunction is typically seen in as amenorrhea, and those who are amenorrheic are typically seen as having a more severe presentation of PCOS [7]. The published literature reflects that 15% of female athletes with menstrual problems were diagnosed with PCOS. Limited studies to date have been published assessing female athletes with PCOS, highlighting a need for further research



in this population. Current evidence supports a close relationship between the degree of cycle irregularities and the grade of endocrine and metabolic disorders among these females [8].

Hirsutism

Hirsutism is the only sufficient substitute of biochemical hyperandrogenism in adolescents, as acne is common during this time period and alopecia is very uncommon [9]. These physical signs are particularly noted in any clinical exam. Hirsutism is the appearance of dark, coarse hair in a male-like pattern in females, which is a very common sign of PCOS, presenting in approximately 75% of young females with PCOS [10]. The severity of hirsutism is visually scored using mFG, which is the current gold standard in assessment. The mFG scores body sites including upper lip, chin, and chest, upper and lower back, upper and lower abdomen, arms, and thighs. Total scores are ranked out of and hirsutism is recognized as mild up to 15 and severe above 25 [11]. Hirsutism is an outward sign of elevated androgens.

Acne

Acne and androgenic alopecia are not essential to the diagnosis of PCOS; however, these symptoms are seen frequently within this population [12]. Acne is a common complaint among many females and is found more frequently post-adolescence in females with PCOS than those in the general population. Also, the presenting acne is typically resistant to many topical treatments. In a study, females presenting with acne, 39.6% of participants were diagnosed with PCOS [13]. Females with resistant acne, alongside additional clinical symptoms of PCOS, require further biochemical explorations to identify if a diagnosis may be present.

Alopecia is defined as the thinning of hair or scalp hair loss affecting approximately 36.6% of females with PCOS [14]. In a cross-sectional study, androgenic alopecia was found in 23% of patients with PCOS, but this clinical finding was not tied to increased hyperandrogenism or other metabolic parameters. Genetic or environmental factors may also play a role related to hair loss in these females [15].

Obesity

Obesity is a common feature observed in females with PCOS. It contributes to the characteristic symptoms of PCOS [16]. Adipose tissue in viscera secretes many adipocytes having adiponectin which decreases in obese individuals as it is associated to insulin resistance [17]. PCOS females have lower expression of adiponectin levels. It causes impaired glucose tolerance and diabetes mellitus type 2 [17].

Psychological Effects

Females with PCOS are more susceptible to psychological disorders and low self esteem. They have more male pattern hair, infertility and concerns with feminine identity [18]. They also face mood disturbances and depression [19,20].

Long-Term Complications

Young females with PCOS are at a higher danger of comorbidities, for example, weakened glucose resistance, metabolic disorder, hypertension, dyslipidemia, and endometrial hyperplasia (a state of the female conceptive framework wherein the coating of the uterus turns out to be surprisingly thick a direct result of having such a large number of cells) [21]. Endometrial hyperplasia, if not treated, can lead to endometrial cancer [22]. Young females with PCOS are also likely to be at increased risk for cardiovascular disease (CVD) later in life [23]. The presence of stoutness in teenagers with PCOS further adds to this intricacy as it is connected with thickening of the intima media of the carotid supply route [24]. These females will in general have a higher BMI and systolic pulse than solid females, which expands their danger for carotid conduit sickness to that of grown-ups with the illness. Mental issues like gloom, tension, bipolar turmoil, and voraciously consuming food issue are likewise noted to be among the drawn out difficulties found in people with PCOS [25]. Early conclusion, counteraction, and treatment are thusly significant [26].

Genetics:

There is also evidence of genetic involvement in occurrence of PCOS [27,28], however, the mechanisms are unclear. Studies are still under investigation to rule out the genetic causes.

Environmental factors: Regarding the origin of PCOS, environmental factors such as prenatal exposure to androgens known as a male sex hormone, such as testosterone (T) and weight gain have been discussed as contributing factors therefore, genetic factors can lead to high susceptibility to PCOS and the syndrome to develop only in the presence of a specific environment, most likely with exposure during fetal life or early childhood [29].

Biochemical and Metabolic Issues: The key biochemical irregularities of PCOS incorporate hyperandrogenism, hyperinsulinemia, and ovarian brokenness. A considerable lot of the biochemical attributes of PCOS worsen one another, further expanding the seriousness of the repeating condition. Treatment of PCOS requires a comprehension of these interrelated biochemical issues. Biochemical hyperandrogenism is the most normally communicated component of PCOS.

There might be clinical markers to distinguish hyperandrogenism in an individual, in any case, biochemical hyperandrogenism can be surveyed by an estimation of the serum androgen list [30].

Impact of PCOS on Sports Performance: The hormonal status of an athlete affects health and performance. While amenorrhea related to low energy accessibility has been displayed to diminish execution, the hormonal profile in PCOS, where androgens are higher [31]. Androgens have been observed to be a necessary piece of the safeguarding of bone and muscle tissue. While addressing a pharmacological intercession, research on the utilization of exogenous androgenic anabolic steroids shows an improvement in athletic execution through diminished exhaustion, and expanded force. Skeletal muscle is exceptionally receptive to T and helps increment skeletal bulk, which thus can expand energy execution and influence body creation. A meta-examination on exogenous T showed that supplementation helped body synthesis in men by expanding fit mass and diminishing fat mass. Body structure information from females with PCOS showing endogenous androgenic profiles feature an increment in fat mass contrasted with controls without PCOS, notwithstanding an expansion in slender mass. Endogenous androgens in youthful females have been less concentrated comparable to brandishing execution; notwithstanding, the predominance of competitors with PCOS might reflect an advantage for sporting performance [32].

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