

Chronic Disease and Polycystic Ovary Syndrome: Are they Related?

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Editorial

Open Access has become a passionately discussed topic all over the world. Open Access can be defined as a 'global public good': an instrument to stimulate the growth and quality of global science, as well as an instrument for realizing the rights to share in scientific advancement and its benefits, to education and to information (articles 27, 26 and 19 of the Universal Declaration of Human Rights respectively) [1]. Open Access (OA) journals such as "Journal of Women's Health Care" (JWHC) from OMICS Publishing Group allow researchers to maximize dissemination of their work by reaching the largest possible readership. Articles published in open access format are more likely to be cited than those that are not [2]. Due to this reason impact factor of open access journals is on the rise for the last couple of years [3]. Researchers in developing nations are more likely to access information published by OA journals. OMICS Publishing Group strongly supports the open access initiative and all articles published by OMICS Publishing Group are freely accessible to everyone immediately after publication. Some of the special features of OMICS group journals include digital formatting, audio listening, language translation and ability to share views on articles via social networking. The JWHC under open access category elaborates the application of new knowledge in different fields such as maternal health, child birth, menopause, contraception and breast cancer. The knowledge and expertise of the editors and editorial board members of JWHC ensures high quality research articles and allows for a comprehensive review of scholarly works that span broad spectrum of issues concerning women's health care.

Polycystic ovary syndrome (PCOS) is one of the most common endocrine disorders, affecting between 8% (NIH criteria) and 18% (Rotterdam criteria) of women of reproductive age [4]. This variability in prevalence of the syndrome is due to various logistical difficulties in diagnosing the syndrome and considerable heterogeneity in the presentation of symptoms resulting in lack of agreement over the diagnostic criteria used to define the condition. PCOS has an uncertain aetiology with recent studies pointing to a strong genetic basis [5,6]. Some of the principal symptoms of PCOS include oligomenorrhea or amenorrhea, anovulation leading to infertility, high androgen levels resulting in acne and hirsutism, tendency towards obesity, insulin resistance, and evidence of multiple cysts within the ovary. The phenotype varies widely depending on life stage, genotype, ethnicity and environmental factors including lifestyle and bodyweight. In United States about \$4.36 billion is spent annually in diagnosis and treatment of the PCOS [7]. Studies conducted in families in which PCOS is prevalent also indicate the presence of chronic disease such as diabetes mellitus (DM) [8,9] and cardiovascular diseases (CVD) [10,11]. Now the question that needs to be answered is whether the prevalence of PCOS in women has any correlation with the occurrence of chronic disease within their families.

A recent study in Australia based on a community based cohort using a defined sampling frame reported that the parents of women who had been diagnosed with PCOS were more subject to chronic diseases than parents of women who had never been diagnosed with PCOS [12]. Previous studies conducted in the first degree relatives of PCOS women have also revealed higher insulin resistance, serum androgen levels and

type-2 diabetes as well as glucose tolerance disorder compared to the control groups [13,14]. Together, the incidence of diabetes, impaired glucose tolerance, and impaired fasting glucose was 40% in the mothers and 52% in the fathers of PCOS women [8]. Mothers, fathers, brothers, and sisters of PCOS women were found to have insulin resistance. In the family members of PCOS patients, hyperinsulinaemia and insulin resistance could act as important markers. Nowadays, PCOS has been acknowledged as a major risk factor for the development of type-2 diabetes.

Low adiponectin levels were reported by Yilmaz et al. [8] in the first degree relatives of PCOS patients when compared to the age, sex and BMI (body mass index) matched controls. People with low adiponectin levels are at an increased risk of cardiovascular disease (CVD). Homocysteine (Hcy) is a non-protein amino acid formed during the breakdown of methionine. Previous studies have indicated that Hcy as an independent risk factor for CVD [15]. This was later confirmed by Loverro et al. [16] when they found that increased Hcy levels in individuals suffering from PCOS might predispose them to early atherosclerosis and CVD compared to healthy control subjects. Resistin, also known as adipose tissue-specific secretory factor (ADSF) is a cysteine-rich protein that in humans is encoded by the *RETN* gene. Resistin levels were found to be significantly high in PCOS groups of fathers and mothers compared to controls [8] and could play a key role in pathogenesis of cardiovascular diseases. Dyslipidaemia is the most common metabolic disorder in PCOS [17] and is an accepted risk factor for CVD. The occurrence of hypertension and hyperlipidaemia were found to be high in first degree relatives of individuals with PCOS [8]. Together, the results imply that low serum adiponectin, high homocysteine and resistin levels in the first degree relatives of PCOS individuals could make them more prone to chronic diseases such as DM and CVD. There is a need for the first degree relatives of PCOS patients to be monitored for DM and CVD development and preventive measures to be taken.

PCOS is a complex condition in women with manifestations across the lifespan and reflects a major health and economic burden in many countries. Therapy should target both short and long-term reproductive, metabolic and psychological aspects. Given the aetiological role of insulin resistance and the impact of obesity on both hyperinsulinaemia and hyperandrogenism, multidisciplinary lifestyle improvement aimed at normalizing insulin resistance, improving androgen status and aiding weight management is recognized as a critical initial treatment strategy. Loss in body weight of about 5%

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to 10% has been shown to improve many of the symptoms of PCOS. Management of PCOS should focus on medical therapy along with support, education, addressing psychological needs and encouraging healthy lifestyle. Monitoring and management of long-term metabolic complications is also an important part of routine clinical care. Screening high-risk family members for metabolic disorders should also be made a priority. More research efforts are needed to tackle this complex problem and I am confident that the "Journal of Women's Health Care" from OMICS Group will play a key role in this direction.

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