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Systematic Review

Why the Rate of PCOS/PCOD Increase at the Age of Menarche?

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ABSTRACT

Polycystic Ovarian Syndrome (PCOS) ratio increase at age of menarche worldwide **Objective:** The objective is to determine the cause of PCOD/PCOS at the age of menarche **Methods:** Age at menarche was compared with PCOS/ PCOD. The data extracted by Medline, PubMed and Obsgyne online library that were queried for studies published between 1998 to 2021 by using specific MeSH terms. We reviewed 10 cross-sectional style analytical studies for the collection of data in this systematic article **Results:** 10 studies conducted between the years 1998 to 2021 included in this systematic review. The age of menarche is between 10-18 years. Menarche is one of the major causes of PCOD/PCOS due to poor diagnosis of normal pubertal ovaries and polycystic ovaries. At the age of menarche, the weight ratio is subjectively increased due to poor diet and then BMI increased. So PCOD/ PCOS ratio increases day by day at the age of menarche.
Conclusions: Age at menarche in women with PCOS is influenced by BMI and genetic Variants and poor diagnosis at ultrasound scan.

INTRODUCTION

In the reproductive age of women, the most common endocrine disease is PCOD/PCOD. PCOS/PCOD is a condition in which ovaries produce abnormal amount of androgen, PCOS/PCOD represent the numerous small cysts in the ovaries, some women do not have cysts with PCOS/PCOD and some have cysts without the disorder [1]. There are no criteria that we can find this syndrome, but still it is divided into three steps where we can find this syndrome such as the result of clinical findings, laboratory findings and the result of morphological changes of ovaries during ultrasound scan [2]. At the age of menarche girls represent with the PCOD/PCOS in a wider range [3]. The very first menstrual period is known as menarche [4]. Menstruation is the shedding of endometrial layers every month when ovulation is not followed by fertilization [5]. The average age of menarche is 12 to 13 years but menarche can occur between the age of 11 to16 years [6]. The causes of PCOS/ PCOD are vary according to age and behavior such as anxiety, depression, over-weight[7].

According to Rotterdam criteria, irregular menstruation is a major sign to PCOS. At the age of menarche, it is very difficult to find either it is normal pubertal development or the signs of PCOS, so at the age of menarche there is a lot of risk to develop PCOS [8]. Signs and symptoms of PCOS/PCOD include acne, increased BMI, irregular menstrual cycle and hirsutism. These are one of the important signs of PCOS. Hirsutism is defined as the excessive growth of hair in androgen dependent regions [9]. The PCOS/PCOD are defined on three bases, the very first criteria were proposed by National Institute of Health (NIH) in 1900 that if there is a sign of hyperandrogenism and chronic an-ovulation and the findings of ultrasound referred to polycystic ovaries [10]. Later on, a new criterion proposed in 2003 when a joint meeting of European Society for Human Reproduction (ESHRE) and the American Society of Reproductive Medicine (ASRM) was held, new guidelines were suggested as if a woman have at least 2 of these 3elements are present (hyperandrogenism, chronic an-ovulation and polycystic ovaries) then the women must have PCOD [10]. In 2006 the Androgen Excess Society worked on the phenotypes of PCOS and proposed new criteria as oligo-ovulation and an-ovulation or polycystic ovaries and Increase level of androgen or related disorders and hirsutism or hyperandrogenism, are the diagnosis of PCOS/PCOD[11].

METHODS

It is a systemic review conducted by literature search through PUBMED, Medline, Google scholar that were queried

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for studies published between 1995 to 2021 by using specific MeSh terms. We took data from 10 original articles. So, we reviewed the different cross-sectional analytical studies for the collection of data. Articles published before 2021 were included in this review so according to their criteria it included studies with this criterion: Females between 10 to 18 years, PCOS/ PCOD females with irregular menstruation included. Articles published before 2021 included in this review so according to their criteria it excluded all males and females who were more than 18 years.

RESULTS

Ten studies conducted between the years 1998 to 2021 were included in this systematic review. The total sample size was 2800 women aged between 10-18 years. Menarche is one of the major causes of PCOD/PCOS due to poor diagnosis of normal pubertal ovaries and polycystic ovaries. At the age of menarche, the weight ratio is subjectively increased due to poor diet and then BMI increased. So PCOD/PCOS ratio increases day by day at the age of menarche. The best method to find PCOD/PCOS is ultrasound. If the ovaries size is larger than 10 mm than so it must include in the criteria of PCOD/ PCO.

DISCUSSION

In 2020, the guideline recommendations were especially for young girls and women; this paper summarized evidence and recommendations related to adolescents namely as females between age of 10 to 19. It is related to gynecological age specially 8 years post menarche; these girls will be at high risk of PCOD/ PCOS [13]. In a study of "Environmental and Genetic Factors Influence Age at menarche in Women with Polycystic Ovary Syndrome". This study demonstrates that women with PCOS were more likely to report early and late development compared to their peers. The difference was explained by early or late menarche in women with PCOS. The timing of menarche depends on BMI too [14]. Previously it was demonstrated that girls with high BMI experience late menarche and high rate of having PCOS [15,16]. The reported weight group tended to increase in young age 10-18 years, so these findings is also compatible to previous studies that overweight cause PCOS [17,18].

A study of "Polycystic ovaries and associated clinical and biochemical features in young women" in this study 224 women attended ultrasound scan. Analysis of biochemical data showed that women with polycystic ovaries had higher total serum testosterone concentrations. Sub-group analyses of women according to ovarian morphology and features of PCOS revealed greater mean BMI in women with PCOS, and also indicated lower fasting insulin concentrations and greater insulin sensitivity in polycystic ovary [19].Another study conducted in 2019 included 440 patients who visited health care centers across Pakistan. All participants had >1 complication of PCOS, the most common complication included Over weight (80%) so in these patients PCOS left untreated and cause major risk factors [12]. In a study of 5200 women with PCOS/PCOD [20]. It found that at the age of menarche in women with PCOS is influenced by both low and high weight and he found that the girls with PCOS showed a wider range in age at menarche than control groups [21].

Recent studies show that if there are 20 or more than 20 follicles are seen so we can categorize as PCOS and because of this Rotterdam criteria needs to be revised [26].

the best and gold standard modality is trans vaginal ultrasound for polycystic ovaries[23]. The ultrasonographic features of PCOS/PCOD are: Number of follicles should be increased upto 20 or More than 20 [23]. Each follicle is similar in shape and size and can be measured upto 2-9 mm [24]. Follicles should be peripherally distributed [23]. STRING PEARLS appearance seen[25-27].

CONCLUSIONS

The incidence of PCOS/PCOD increases at age of menarche. At menarche it is difficult to differentiate between normal pubertal ovary and a polycystic ovary, that's why PCOD/PCOS rate increased at menarche. So, it is very important to see ovaries while doing Trans abdominal ultrasound in young girls by using high frequency probe to detect PCOS early.

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