American, European, and Chinese practice guidelines or consensuses of polycystic ovary syndrome: a comparative analysis*

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Abstract: Polycystic ovary syndrome (PCOS) is the most common metabolic and endocrine disorder in women. However, there is no agreement concerning how to diagnose and treat PCOS worldwide. Three practice guidelines or consensuses, including consensus from the European Society of Human Reproduction and Embryology (ESHRE) and the American Society for Reproductive Medicine (ASRM) in Rotterdam, diagnosis criteria and consensus in China, and clinical practice guideline from the Endocrine Society (ES) in the United States are widely recognized. The present paper may provide some guidance for clinical practice based on a comparative analysis of the above three practice guidelines or consensuses.

Key words: Practice guideline; Consensus; Polycystic ovary syndrome

1 Introduction

Polycystic ovary syndrome (PCOS), as the most common metabolic and endocrine disorder in women, is characterized by oligo-ovulation/anovulation, hyperandrogenism, and polycystic ovaries (Norman et al., 2007). The prevalence of PCOS in Chinese women aged between 12 and 44 years was 7.1%, 11.2%, and 7.4% according to the National Institutes of Health diagnostic criteria (1990), the revised Rotterdam diagnostic criteria for PCOS (2003), and the recommended diagnostic criteria for PCOS by the Androgen Excess Society (2006), respectively. The prevalence of PCOS increases rapidly from 12 to 14 years of age, peaks between 15 and 24, and decreases gradually thereafter, reaching its lowest point before menopause (Zhuang et al., 2014).

Until now, there has been no agreement concerning how to diagnose and treat PCOS worldwide. However, three practice guidelines or consensuses, including consensus from the European Society of Human Reproduction and Embryology (ESHRE) and the American Society for Reproductive Medicine (ASRM) in Rotterdam (The Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004a, 2004b; The Thessaloniki ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2008a, 2008b; Fauser et al., 2012; The Amsterdam ESHRE/ASRM-Sponsored 3rd PCOS Consensus Workshop Group, 2012), diagnosis criteria and consensus in China (Endocrinology Group et al., 2008; Chen et al., 2011), and clinical practice guideline from the Endocrine Society (ES) in the United States (Legro et al., 2013), are widely recognized. The
present paper could provide some guidance for clinical practice based on a comparative analysis of the above practice guidelines and consensuses.

2 Diagnosis of PCOS

As shown in Table 1, the PCOS diagnostic criteria for adults from Rotterdam and ES are similar (The Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004a, 2004b; The Thessaloniki ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2008a, 2008b; The Amsterdam ESHRE/ASRM-Sponsored 3rd PCOS Consensus Workshop Group, 2012; Fauser et al., 2012; Legro et al., 2013). In both criteria, androgen excess, ovulatory dysfunction, and polycystic ovaries are equally important for the diagnosis of PCOS in adults. Women who meet any two of three conditions, excluding other disease, e.g. thyroid disease, hyperprolactinemia, congenital adrenal hyperplasia, androgen-secreting tumors, and Cushing’s syndrome, could be diagnosed with PCOS. However, in the Chinese diagnostic criteria for PCOS, oligomenorrhea, amenorrhea, or irregular uterine bleeding was required for diagnosis of PCOS (Endocrinology Group et al., 2008; Chen et al., 2011). In other words, women with only hyperandrogenism and polycystic ovaries (but without oligo-/amenorrhea) could not be diagnosed with PCOS in China (Endocrinology Group et al., 2008; Chen et al., 2011). The difference between PCOS diagnostic criteria in China and other countries was probably a result of the distinct PCOS phenotype distribution in China (Li et al., 2013), which is associated with genetic (Cui et al., 2013) and environmental factors (Merkin et al., 2016). As early as 1992, it was found that obesity and hirsutism are associated with some genetic factors (Carmina et al., 1992), and the ethnic background of women with PCOS needs to be considered in studies that investigate its metabolic parameters (Norman et al., 1995). The serum levels of anti-Müllerian hormone (AMH) were also found to be a promising indicator in the diagnosis of PCOS (Laven et al., 2004; Pigny et al., 2006). These genetic and environmental factors should be considered during the initial assessment of PCOS patients.

According to the Rotterdam criteria, only an adolescent girl with oligo-/amenorrhea, hyperandrogenemia, and polycystic ovaries could be diagnosed with PCOS (The Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004a, 2004b; The Thessaloniki ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2008a, 2008b; The Amsterdam ESHRE/ASRM-Sponsored 3rd PCOS Consensus Workshop Group, 2012; Fauser et al., 2012). However, in the ES criteria, confirmation of polycystic ovaries was not a necessary condition, mainly due to technical and interpretive uncertainties. Hyperandrogenism and persistent oligomenorrhea were considered the two main points of evidence of PCOS in adolescents in the ES criteria (Legro et al., 2013). Unfortunately, there was no mention of PCOS diagnosis in adolescents in the diagnostic criteria and consensus in China (Endocrinology Group et al., 2008; Chen et al., 2011). Hence, more attention should be given to PCOS in the Chinese adolescent population. As about one-half of menstrual cycles were anovulatory in the first two years after menarche in adolescent girls (Apter et al., 1993), and there existed some difficulties in the evaluation of polycystic ovary morphology, a more standard diagnosis protocol for the adolescent is urgently needed. As early as 1983 it was found that the measurement of plasma free testosterone before and after administration of dexamethasone appears to be the most sensitive single method for detecting PCOS in adolescents (Moll and Rosenfield, 1983). To test ovarian androgenic function in these adolescents may be of prognostic value, because those adolescents with functional ovarian hyperandrogenism have persistent hyperandrogenism, and glucose tolerance tends to deteriorate (Rosenfield et al., 2015). The ovarian androgenic function test could be considered in designing a specific diagnosis protocol for the adolescent.

Diagnosis of PCOS in perimenopause and menopause was first proposed in the ES criteria (Legro et al., 2013). However, as the ovarian volume and follicle number will gradually decrease with age, polycystic ovaries might present less frequently in menopausal women. As the diagnosis of PCOS in postmenopausal women was problematic, many of them may be diagnosed earlier. Since ethnic background plays an important role in the clinical manifestation of PCOS, an accurate diagnosis in menopausal Asian women needs more in-depth study.