Euro Pharmacognosy 2019: Investigation on the Use of Traditional Chinese Medicine for Polycystic Ovary Syndrome in a Nationwide Prescription Database in Taiwan -Wan-Ting Liao- Chung Shan Medical University

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Short Communication

Abstract

Polycystic ovary syndrome (PCOS) is a common condition, affecting 5–10% of women of reproductive age worldwide. It has serious reproductive implications and causes mood disorders and metabolic disorders, such as type-2 diabetes. Because PCOS reflects multiple abnormalities, there is no single drug that can treat all its symptoms. Existing pharmaceutical agents, such as oral contraceptives (OCs), are suggested as a first-line therapy for menstrual irregularities; however, OCs are not appropriate for women pursuing pregnancy. Additionally, insulin-sensitizing agents, which appear to decrease insulin levels and hyperandrogenemia in women with PCOS, have been associated with a high incidence of gastrointestinal adverse effects. It is a common practice in Chinese society to receive traditional Chinese medicine (TCM) for treatment of gynecological problems and infertility. Current research demonstrates that several herbs and herbal formulas show beneficial effects in PCOS treatment. In this study, we conducted the first large-scale survey through the Taiwan National Health Insurance Program database to analyze TCM utilization patterns among women with PCOS in Taiwan during 1997–2010. The survey results revealed that 89.22% women with newly diagnosed PCOS had received TCM therapy. Jia-Wei-Xiao-Yao-San and Xiang-Fu (Rhizoma Cyperi) were the most commonly used formula and single herb, respectively, in the database. In addition, we found that the top five commonly prescribed single herbs and herbal formulas have shown promise in treating symptoms associated with PCOS.

Introduction

Polycystic ovary syndrome (PCOS) is a common condition in humans, affecting 5–10% of women of reproductive age worldwide. It has serious reproductive implications, such as anovulatory infertility, oligomenorrhea, amenorrhea, hyperandrogenism, and pregnancy complications. It can also lead to mood disorders according to a review report, the prevalence of depression among women with PCOS is 4 times greater than that among women without PCOS. Research over the last few decades has revealed that PCOS is strongly associated with metabolic disorders, including an increased risk of insulin resistance, type-2 diabetes, obesity, and cardiovascular diseases (worsening of lipid profile and blood-vessel function; high blood pressure).Some reports have suggested that women with PCOS might have an increased prevalence of non-alcoholic fatty liver disease (NAFLD) and high C-reactive protein levels.

Because PCOS reflects multiple abnormalities, current treatment protocols for PCOS aim to achieve different goals, including healthy weight control, amelioration of hyper androgenic symptoms, management of underlying metabolic and reproductive complications, and improvement of quality of life. In PCOS, weight management through lifestyle and behavioural intervention is a first-line treatment strategy recommended by evidence-based guidelines. With regard to pharmaceutical treatments, oral contraceptives (OCs) are suggested as a first-line therapy for menstrual irregularities and hyperandrogenism. However, OCs are not appropriate for women pursuing pregnancy, and they might cause weight gain, thus exacerbating the PCOS. For fertility needs, clomiphene induces ovulation through the release of the gonadotropin-releasing hormone and, subsequently, gonadotropin from the anterior pituitary. However, pregnancy rates in clomiphene therapy have remained low among overweight women with PCOS. Management approaches for metabolic disorders include treatment with metformin and thiazolidinedione's, which appear to decrease insulin levels and hyperandrogenemia in women with PCOS. However, use of metformin is associated with a high incidence of gastrointestinal adverse effects. Moreover, because of the possibility of cardiovascular adverse events, thiazolidinedione's are not suggested for no diabetic women with PCOS.

Materials and Methods

1.   Data Source

This study used reimbursement claims data deposited in the NHIRD, which has been implemented by the Taiwan government since 1996. The NHIRD contains longitudinal data of a cohort comprising 1 million participants randomly selected from among insurance beneficiaries between January 1997 and December 2013 (LHID2000).

2.   Study Design and Population

This study included patients who were diagnosed with PCOS (ICD-9-CM code: 256.4) in NHIRD from 1 January 1997 to 31 December 2010. All cases had undergone gynecologic ultrasonography (19003C) or blood testing for testosterone or 17-hydroxyprogesterone levels (09121C, 09121B, or 09109C) within a year of diagnosis.

3.   Potential Confounders

We identified any potential confounders for PCOS diagnosed before the index date, including the following comorbidities: diabetes mellitus (ICD-9-CM: 250.x), infertility female (628.x), hirsutism (704.1), acne varioliformis (706.0 or 706.1), obesity (278), lipid metabolism disorders (272.0, 272.1, 272.2, 272.3 or 272.4), major depression (296.2x or 296.3x), anxiety (300.x), and amenorrhea (626.0 or 626.1).

4.   Statistical Analysis

Mean values and standard deviation were described for continuous variables, and percentages were described for categorical variables. Intergroup comparison was performed by the Student t-test and chi-square test for continuous and categorical variables, respectively. Statistical analysis was performed using SAS 9.4 (SAS Institute, Cary, NC, USA) software. Two-tailed p values < 0.05 indicated statistical significance.

Results:

The present analysis included 6682 subjects who were newly diagnosed with PCOS during 1997–2010. All enrolled patients had undergone gynecologic ultrasonography or blood testing for serum testosterone levels. Among the enrolled subjects, while 720 did not receive TCM for treatment of PCOS in the follow-up period, 5962 had received TCM for PCOS treatment. In both cohorts (TCM users and nonusers), the highest proportion of patients were in the age group of 18–29 years. There was no substantial difference in urbanization level or standard of hospitals (where PCOS was diagnosed) between the two groups. With regard to comorbidities, TCM users had a higher prevalence of infertility (p = 0.027), amenorrhea (p < 0.0001), and anxiety (p = 0.0002) than TCM nonusers. The prevalence of diabetes mellitus, obesity, lipid metabolism disorders, and major depression was similar in both groups.

The results of analysis of medical records in the TCM outpatient departments revealed that 50.37% of patients with PCOS were treated with herbal medicine only, 0.18% with acupuncture or manipulative therapy only, and 49.45% with combination treatment. With regard to the frequency of hospital visits, most patients (60.32%) had visited TCM clinics less than three times. Approximately 25.9% of the patients had received TCM treatment more than six times.

Discussion:

In 2012, the proceedings of a National Institutes of Health (NIH) workshop suggested that the Rotterdam 2003 criteria be used for diagnosis of PCOS. The Rotterdam criteria recommended that PCOS be diagnosed on the basis of the presence of two of the following three features: oligo- and/or anovulation, clinical and/or biochemical hyperandrogenism, and polycystic ovaries identified by ultrasonography. Thus, in the present study, we selected cases from the NHIRD on the basis of examination codes indicating gynecologic ultrasonography and blood testing for testosterone level.

Note: This work is partially presented in 7th European conference on Pharmacognosy, Medicinal Plants and Natural Products December 02-03, 2019 held at Paris, France.