Prevalence Of Polycystic Ovarian Syndrome (Pcos) In Women Of Child Bearing Age Within Port Harcourt Metropolis In Nigeria Using Sonographic Evaluation

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Abstract

Polycystic ovarian syndrome (PCOS) in women of child-bearing age is one of the most common causes of primary and secondary infertility, and may often be associated with other health or social issues. The prevalence however, varies among age group and geographical area. Ultrasound plays an important role in the initial evaluation and follow-up treatment of patients with PCOS. This study was to evaluate the prevalence of polycystic ovarian syndrome based on the sonographic survey of the ovaries of 200 women of childbearing ages of 13-51 years in Port Harcourt metropolis in Nigeria. This was a retrospective study for a period of twelve months from two hospitals.

Results: A total of 33 women (16.5%) were diagnosed with PCOS. Ages 27-31 years had the highest occurrence of polycystic ovarian syndrome (18 cases 9%). The most common clinical presentations were primary and secondary infertility (24.2 and 21.2%, respectively). In conclusion, polycystic ovarian syndrome was common among women of child bearing age in Port Harcourt metropolis, with ages 27-31 years having the highest occurrence, and primary infertility being the common clinical presentation. Thus, women of child bearing age presenting with infertility should be examined with ultrasound for early diagnosis and treatment of polycystic ovarian syndrome.

Keywords: Polycystic ovarian syndrome; Sonography; Infertility; PCOS

Introduction

Polycystic ovarian syndrome, also known as Stein-Leventhal syndrome is an endocrine mediated disorder that affects the ovaries in women of child bearing age (Encyclopaedia Britannica, 2017). Although the aetiology of polycystic ovarian syndrome is not known, it is associated with numerous health risks such as diabetes mellitus, hypertension, obesity, cardiovascular diseases, and infertility problems such as anovulation, endometrial hyperplasia and hyperandrogenism among others [1,2]. Psychological impairments including depression and other mood disorders, as well as other patient observable symptoms like irregular menstrual cycle, irregular ovulation, hirsutism and acne, have all been documented [3]. Recent studies appear to establish an increasing susceptibility to coronavirus disease 2019 (COVID-19) among patients with PCOS especially in the presence of comorbidities of obesity, Type 2 diabetes mellitus (T2DM), fatty liver, and androgen excess [4]. It is also a fact that Insulin resistance which may occur in PCOS may be linked to low-grade chronic inflammation as well as androgen excess which has a direct impact on adipocyte biology and metabolism. Accordingly PCOS is also associated with comorbidities such as non-alcoholic fatty liver disease (NAFLD), obesity, metabolic syndrome as well as the alterations in the gut micro biome, further worsening the potential for COVID-19 infection [4].

Different types of polycystic ovarian syndrome have been reported to include insulin-resistant, inflammatory, hidden-cause, and pill-induced. The insulin-resistant polycystic ovary syndrome is the most common type, and is caused by smoking, pollution, sugar and trans fat, while, the pill-induced polycystic ovary syndrome comes second and is caused mostly by birth control pills [5].

A positive ultrasound diagnosis of PCOS, is one of the three conditions to be met in the Rotterdam criteria for diagnosis. A more inclusive diagnostic criterion for diagnosis of PCOS has been evaluated in Nigerian women using three-model criteria such as the 1990 National Institutes of Health (NIH), the 2003 Rotterdam and 2006 Androgen Excess Society (AES) criteria [6].

The prevalence of polycystic ovarian syndrome varies according to diagnostic consensus used, with estimates ranging from 6% (National Institutes of Health consensus) to 18% (Rotterdam consensus) of reproductive-aged women of different ethnicity (Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004; The morphological features of the ovaries in women with polycystic ovary syndrome have been well described by ultrasound imaging technology; enlarged ovary size, with multiple follicles, increased ovarian stroma and echogenicity are some of the features (Figure 1).

The most basic form of treatment for women with polycystic ovary syndrome is the initiation of an exercise regimen combined with proper nutrition to encourage weight loss and improve insulin sensitivity. Suppressing excess androgen production may be the focus if the syndrome is severe. Polycystic ovarian syndrome induced infertility is often treated with drugs that induce ovulation; however, oral contraceptives can be administered in women who may desire not to become pregnant. In extreme cases, laparoscopic surgery can be used to remove portions of the ovary and thus, reduce the production of androgens. In addition, anti-diabetic drugs have been reported with positive outcome [7].

Ultrasound identification of the presence of polycystic ovarian morphology is recognized as a component of its diagnosis. Transvaginal ultrasound is considered the gold standard due to the optimal visualization it provides of the internal structure of the ovary [8]. There is, however, a paucity of data for the ovarian morphology in normal and polycystic ovary syndrome in women of child bearing age in our environment. This study therefore aimed to evaluate the prevalence of polycystic ovarian syndrome based on the sonographic survey of the ovaries in women of child bearing ages of 13-51 years in Port Harcourt metropolis in Nigeria (**Figure 1**).

Materials and Methods

A retrospective study of polycystic ovarian syndrome in women of child bearing age, 13-51 years of age who undertook transvaginal ultrasound examination of the pelvic for a period of twelve months from fifth day of January, 2019 to the twentieth day of December, 2019 from two ultrasonography centres in port Harcourt Metropolis, Rivers, Nigeria.

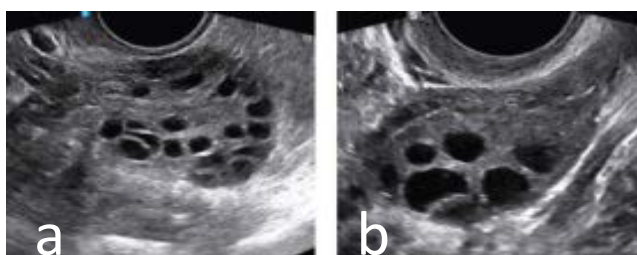The study was carried out on all women of child bearing age 13-51 years who were clinically suspected to have polycystic ovarian syndrome, and referred for pelvic ultrasound examination within a period of 12 months, from January 2, 2019 to December 20, 2019. Approval for this study was obtained from the Ethical Committee of the Rivers State University Teaching Hospital, as well as the administration of Image Diagnostic Centre.

A total of hundred ultrasound reports were obtained from each of the two health facilities. Ultrasound images were Assessed based on pelvic ultrasound examination, diagnosis or impression of the scan images. Information on the sex, age and the clinical indications were obtained from patient request and report forms and patient's registration log books, respectively.

Results

A total of 200 pelvic sonographic reports were analysed for sonographic diagnosis of PCOS. A total of 33 (16.5%) had diagnosis, while 167 (83.5%) were negative. The result is presented in Table 1. Out of the 100 patients for each facility, 12 cases were identified in Facility 1 and 21 cases in facility 2, giving a total of 33 positive cases (**Table 1**).

Percentage Distribution of Polycystic Ovarian Syndrome

Twenty one per cent of the cases at Image Diagnostic Centre were positive for polycystic ovarian syndrome, while 12% of the cases at RSUTH were positive for polycystic ovarian syndrome (**Figure 2**).

Age Distribution of Positive Polycystic Ovarian Syndrome

The Age distribution of positive polycystic ovarian syndrome at

Table 1. The number and percentage distribution of the positive and negative cases of PCOS in RSUTH and Image Diagnostic Centre.

Hospitals	Total Number of Women	Total Females With PCOS	Percentage (%)	Total Female Without PCOS	Percentage (%)
Image Diagnostic Centre	100	21	21	79	79
RSUTH	100	12	12	88	88
Total	200	33	33	167	16

Figure 1 Sonographic images of the ovary in transvaginal ultrasound scan: a. Polycystic ovarian syndrome; b. Normal ovary (Lee and Rausch, 2012).
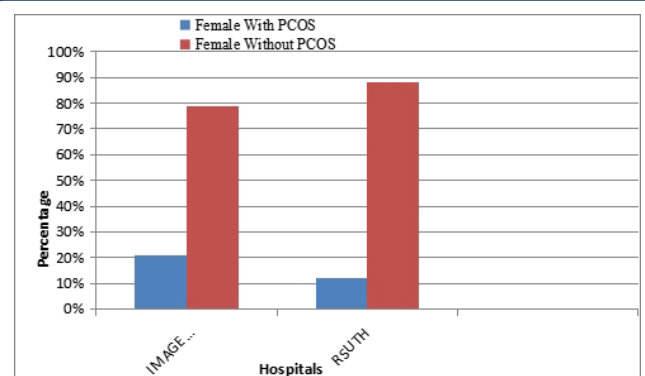

Figure 2 Percentage distribution of women of child bearing age with and without PCOS in both hospitals.

Image Diagnostic Centre and Rivers State University Teaching Hospital presented in (**Figure 3**).

Clinical Presentations

Primary infertility was the commonest clinical indication follow by secondary infertility, chronic anovulation, amenorrhea, oligomenorrhea, sexual transmitted disease, diabetes, obesity and metabolic syndrome (**Table 2**).

Discussion

this study aimed to evaluate the prevalence of polycystic ovarian syndrome based on the sonographic survey of the ovaries in women of child bearing ages of 13-51 years in Port Harcourt

Table 2. Clinical presentation of polycystic ovarian syndrome from the two hospitals.

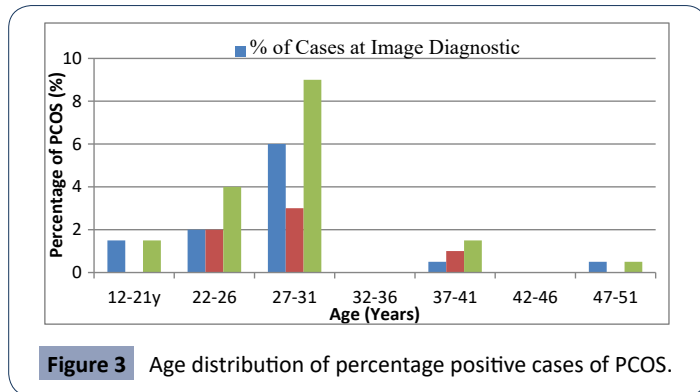| Clinical Presentation	Frequency	Percentage (%)
Primary Infertility	8	24.2
Secondary Infertility	7	21.2
Chronic Anovulation	5	15.2
Amenorrhea	4	12.1
Oligomenorrhea	4	12.1
Sexual Transmitted Disease	3	9.2
Diabetes	1	3
Obesity and Metabolic Syndrome	1	3
Hirsutism	0	0
Total	33	100

Figure 3 Age distribution of percentage positive cases of PCOS.

metropolis in Nigeria. Out of a sample population of 200 women of child bearing age 13-51 years, only 33 (16.5%) were positive for polycystic ovarian syndrome. It was observed that polycystic ovarian syndrome was minimal between ages 12-21 and 32-51 years and increased in the age groups 22-26 and 27-31 years. Where there are larger population of ovarian follicles, the more likelihood for the diagnosis of polycystic ovarian syndrome [9-12]. Hudecova et al. (2009) reported that ultrasonography is a reliable tool for the detection of polycystic ovarian syndrome in women of reproductive age, which may have accounted for the high incidence in age groups 22-26 and 27-31 years of the present study.

The decrease in age distribution in the 12-21 years group may be attributed to premature ovarian failure or primary ovarian insufficiency or signs and symptoms that characterize polycystic ovarian syndrome overlap with normal [13]. However, Bronstein et al. (2011) reported a high diagnosis among adolescents (13-18 years), although his focus was among children less than 18 years. The decrease in age distribution from 32-51 years may be attributed to perimenopause/menopause as the incidence of polycystic ovarian syndrome tends to be less (Karjula et al., 2017). Perimenopause or menopause transition can begin eight to ten years before menopause, when the ovaries gradually produce less oestrogen. It usually starts in a woman's 40s but can start in the 30s as well [14].

Based on clinical presentation, the study showed that primary infertility was the most common indication, followed by secondary infertility, chronic anovulation, amenorrhea, oligomenorrhea, sexual transmitted disease, diabetes and obesity. The present result is similar to a previous report where the commonest clinical presentations were primary and secondary infertility [15-21].

Conclusion

In a sample population of 200 and 33 (16.5%) positive case of polycystic ovarian syndrome, it can be concluded that polycystic ovarian syndrome is common in women of child bearing age in Port Harcourt Metropolis in the South-South region of Nigeria. The affected ages were 22 to 26 years, with highest population within ages 27 to 31 years and most common clinical presentations being primary and secondary infertility.

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