

ORIGINAL RESEARCH ARTICLE

The Prevalence of Polycystic Ovary Morphology Among Women Attending a New Teaching Hospital in Southern Nigeria

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Abstract

The aim of this study was to determine the prevalence of polycystic ovary morphology (PCO) among Nigerian women attending for pelvic ultrasound. This was a retrospective study of the ultrasound scan findings of all women who attended for pelvic ultrasound scan at a new teaching hospital in southern Nigeria from the commencement of ultrasound services on 1 March to 31 July 2010. The main indication for the scans was infertility (52.7%), and the commonest finding was fibroid (44.6%). Polycystic ovary morphology was present in 12.2% of the women. On average women with PCO were younger (30.3 v 35.0 years) and more likely to present with amenorrhea (33.3 v 7.6%) than women without PCO, but there was no other statistically significant differences between the two groups. This study suggests that Nigerian women have a low incidence of PCO morphology. (*Afr J Reprod Health* 2014; 18[1]: 161-164)

Keywords: Prevalence, Polycystic Ovary Morphology, Nigerian

Résumé

Le but de cette étude était de déterminer la prévalence de la morphologie des ovaires polykystiques (MOP) chez les femmes nigérianes qui fréquentent l'échographie pelvienne. Il s'agissait d'une étude rétrospective des résultats des analyses des ultrasons de toutes les femmes qui ont participé à l'échographie pelvienne dans un nouvel Centre Hospitalier Universitaire dans le sud du Nigeria depuis le début de services d'échographie, le 1er mars au 31 juillet 2010. La principale indication pour les analyses était l'infertilité (52,7 %) et l'observation la plus courante était fibrome (44,6 %). La morphologie des ovaires polykystiques était présente chez 12,2% des femmes. En moyenne, les femmes avec le MOP étaient plus jeunes (30,3 v 35,0 ans) et plus susceptibles de présenter une aménorrhée (33,3 v 7,6%) que les femmes sans MOP, mais il n'y avait pas d'autres différences statistiquement significatives entre les deux groupes. Cette étude suggère que les femmes nigérianes ont une faible incidence de la MOP. (*Afr J Reprod Health* 2014; 18[1]: 161-164)

Mots-clés: Prévalence, morphologie des ovaires polykystiques, Nigeria

Introduction

Polycystic ovary syndrome is one of the most common endocrine disorders, and the presence of polycystic ovary morphology is a cardinal feature of polycystic ovary syndrome. Typically the ovaries are enlarged with multiple follicles arranged peripherally around a dense stroma, but the criteria with sufficient specificity and sensitivity to define polycystic ovary morphology are the presence of 12 or more follicles of 2-9mm diameter in each ovary, and/or increased ovarian volume of more than 10mls¹ (figures 1 and 2).



Figure 1: Normal Ovary

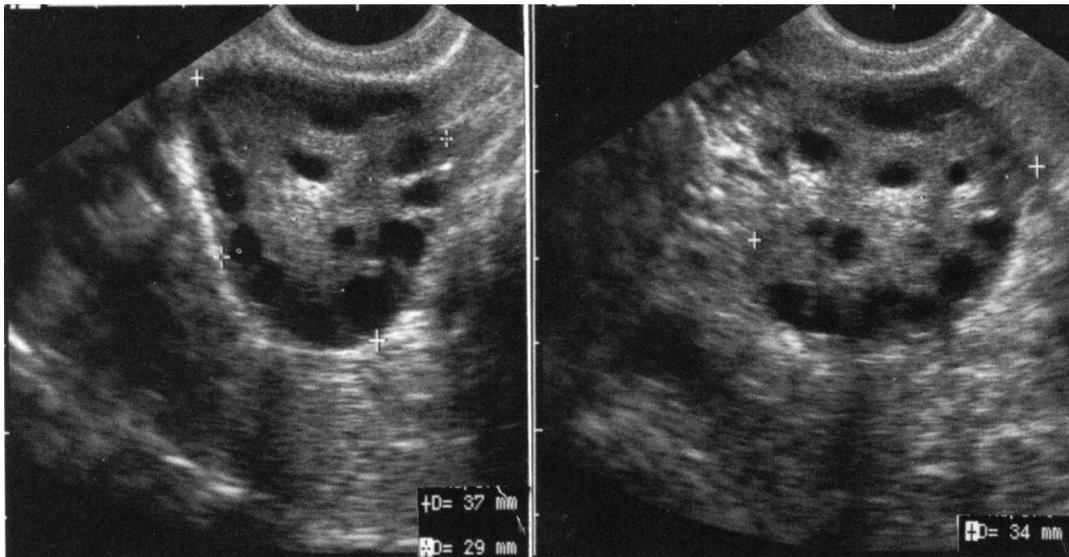


Figure 2: Polycystic Ovary

In the western literature, polycystic ovary morphology occurs in 19-33% of the population, of whom around 80% have symptoms of polycystic ovary syndrome². There is limited data on the incidence of PCO in Africa, and compared to Caucasian women, Nigerian (Yoruba) women show a higher tendency towards exaggerated ovarian response to stimulation for assisted conception associated with a higher prevalence of PCO³. Therefore, the aim of this study is to determine the prevalence of polycystic ovary morphology in women attending for pelvic ultrasound scan in a new teaching hospital in southern Nigeria. This information will assist in the management of women with subfertility who are increasing turning to assisted reproduction technology in African.

Methods

This was a retrospective study of the ultrasound scan findings of all women who attended for pelvic ultrasound scan at a new teaching hospital in southern Nigeria from the commencement of ultrasound services on 1 March to 31 July 2010. During the study period 77 women attended for pelvic ultrasound and the three who were found to be pregnant were excluded from the study. Hence the study group was the remaining 74 women who underwent a transvaginal ultrasound scan. All the

women were of Nigerian ethnic origins. This was a cross sectional study and follow up ultrasound scan was not performed.

All the ultrasound scans were performed by one of the authors (OO) using a Toshiba Nemio 17 ultrasound machine with a 5MHz vaginal probe and 3.75MHz abdominal probe. All women gave informed verbal consent for and had transvaginal ultrasound scan, but a transabdominal ultrasound scan was also performed in the presences of a mass extending beyond the pelvis or failure to visualise the ovaries with the transvaginal probe.

Statistical analysis was performed using IBM SPSS v20 statistics package. Comparisons between women with and without PCO were performed using unpaired t-tests for the scale data (age and BMI) and Chi-squared Test of Association for categorical data. Simple bi-variate analysis was used because the numbers are so small in any one sub-group that logistic regression would not give reliable results.

Data for age ($p = .47$) and BMI ($p = .61$) were both normally distributed when assessed with the Kolmogorov-Smirnov test justifying the use of parametric tests.

Results

Participants had a mean age of 34.42 years (sd = 6.60), mean body mass index (BMI) of 26.22

kg/m² (sd = 6.00), median parity of 0 (inter-quartile range = 2.00) and median gravidity of 1 (inter-quartile range = 2.00) (Table 1). Table 1 shows a breakdown of the demographic and health characteristics of participants with and without PCO. The most common indication for a scan was sub-fertility (52.7%). Table 2 shows a summary of all given indications,

Table 1: Demographic and health characteristics of patients attending ultrasound department at a new teaching hospital in southern Nigeria.

Characteristics	PCO n (%)	Non-PCO n (%)
Age (years)		
20-29	4 (26.7)	11 (73.3)
30-39	5 (11.4)	39 (88.6)
40-49	0 (0)	11 (100)
>50	0 (0)	2 (100)
BMI		
<18.5 (underweight)	0 (0)	3 (100)
18.6-25 (normal weight)	4 (15.4)	22 (84.6)
≥25 (over weight)	4 (14.3)	24 (85.7)
Sub fertility		
Yes	5 (12.8)	34 (87.2)
No	4 (11.4)	31 (88.6)
Amenorrhoea		
Yes	3 (37.5)	5 (62.5)
No	6 (9.1)	60 (90.9)
Presence of fibroids		
Yes		
No	2 (6.1)	31 (93.9)
	7 (17.1)	34 (82.9)
Parity		
0	5 (15.6)	27 (84.4)
1	2 (20)	8 (80)
2	0 (0)	8 (100)
≥3	1 (10)	9 (90)
Endometrium		
Normal	8 (11.8)	60 (88.2)
Polyps	1 (33.3)	2 (66.7)
Fibroids	0 (0)	2 (100)
Inter-uterine adhesions	0 (0)	1 (100)
Uterus		
Normal	7 (17.1)	34 (82.9)
Fibroids	2 (6.1)	31 (93.9)

Please note that due to missing data not all cells add up to 74 participants

In total, 9 women had polycystic ovary morphology (12.2%), the most common pathological finding was fibroids (44.6%). On average women with PCO were younger (m = 30.33, sd = 5.77) than women without PCO (m = 35, sd = 6.54), $t(70) = 2.03$, $p < .05$; and were

more likely to present with amenorrhoea (33.3%) than women without PCO (7.75) $\chi^2(1) = 5.39$, $p = .02$. There was no significant difference in the incidence of uterine fibroids in women with or without PCO (22.2% v 47.7%, $p = 0.279$). No other differences were statistically significant between the two groups.

Table 2: Summary of indications for scan

	n (%)
Subfertility	39 (52.7)
Woman's request	13 (17.6)
Amenorrhoea	8 (10.8)
Abdominal/pelvic pain	6 (8.1)
Pelvic mass	4 (5.4)
Menorrhagia	4 (5.4)

Discussion

Using the Rotterdam criteria we found a 12.2% incidence of PCO which is lower than the incidence of 19-33% in western population², and 32-45% in African populations³⁻⁴. In the study by Wada and colleagues 1994, significantly more Yoruba (Nigerian) women (45 versus 11%; $P < 0.005$) had ultrasound features of polycystic ovary syndrome than Caucasian women³. The incidence of PCO in the Caucasian women is different from the current literature², and the incidence in the Yoruba (Nigerian) women is difference from our findings possibly because Wada and colleagues 1994 carried out their study between 1990 and 1992 before the Rotterdam criteria that was used in the current study^{1,3}.

However, Pembe and colleague 2009 used the Rotterdam criteria and found a higher incidence of PCO amongst women in Tanzania⁴. They studied infertile women attending a gynaecology clinic in Tanzania and found a PCO incidence of 32%⁴. Polycystic ovary syndrome (PCOS) is the commonest cause of anovulatory subfertility, and hence the incidence of polycystic ovary morphology is expected to be high in women having ultrasound as part of fertility investigations. But we found no correlation between subfertility and the presence of PCO, and therefore the lower incidence in this study is unlikely to be because the study was not limited to infertile women. Nevertheless, in keeping with the study of Pembe and colleagues⁴, we found that women with PCO

are more likely to present with oligo/amenorrhea than women without PCO. Hence the presence of PCO is only truly related to anovulatory sub-fertility

We have demonstrated that the participants with PCO were younger than those without. This is consistent with the findings of Alsamarai et al., 2009 who showed that ovarian volume and number of follicles decreased longitudinally with age in polycystic ovary syndrome and control women⁵. And although the average age of participants in this study was 34.4 years, one potential explanation for the low prevalence of PCO may be because the study was not limited to the reproductive age group of 15 to 44 years.

The Black Women's Health Study, a large prospective cohort study of African-American women between 1997 and 2003 found an association between uterine fibroids and self-reported, physician-diagnosed polycystic ovary syndrome⁶. They suggested that polycystic ovary syndrome may influence the development of uterine fibroids via elevation of luteinising hormone levels, dysregulation of insulin-like growth factor and growth hormone axis, and/or increased levels of unopposed oestrogen⁵. We found no association between uterine fibroids and PCO, and this may be because we looked at ultrasound finding of PCO rather than self-reported physician diagnosed PCOS, and therefore our cohort may not have the hormonal changes of PCOS that are responsible for the development of uterine fibroids.

We studied 74 women which is significantly more than the 11 Yoruba (Nigerian) women studied by Wada and colleagues and less than the 100 Tanzanian women studied by Pembe and colleagues³⁻⁴. Further population studies of polycystic ovary morphology with larger numbers are necessary because awareness of racial and

ethnic disparities is critical to a complete understanding of the health issues including sub-fertility facing women in Africa

Contribution of Authors

OO: conceived and designed the study, collected and analysed the data, and prepared the manuscript.

MZ: collected the data and prepared the manuscript

SW: analysed the data and prepared the manuscript

JJ: analysed the data and prepared the manuscript

All authors mentioned in the article approved the manuscript.

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