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RETROSPECTIVE STUDY ON PREVALENCE OF POLYCYSTIC OVARIES: A COMMON FEATURE IN TRANSVAGINAL SCAN

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BACKGROUND

Polycystic ovary syndrome is a multi-factorial disease. The coexistence of hirsutism, oligo-ovulation, infertility and bilateral enlargement of the ovaries was first reported by Stein and Leventhal in 1935.[1] The term *polycystic ovary syndrome* (PCOS) was first used in the 1960s and gradually replaced its former name (Stein–Leventhal syndrome). This disease entity is primarily characterized by disrupted ovulation and hyperandrogenism, but the clinical picture can be diversified and symptom intensity can vary. Currently, the sonographic assessment of ovaries is one of the obligatory criteria for the diagnosis of PCOS according to the Rotterdam consensus (2003).[2] Polycystic ovaries (PCO) are described on ultrasound scan as the "presence of 12 or more follicles in each ovary measuring 2-9 mm in diameter, and/or increased ovarian volume (>10 ml)". Polycystic ovarian syndrome (PCOS) or disease (PCOD) is diagnosed when polycystic ovaries are associated with chronic anovulation and clinical and/or biochemical androgen excess (typically featured as oligo-amenorrhoea and hirsutism/acne, respectively). The Rotterdam criteria for diagnosis require any two of the three features. Unilaterality does not affect diagnosis; neither does the location of the cysts in the ovary. PCOS is associated with infertility, as well as obesity, insulin resistance and hyperinsulinemia, leading to impaired glucose tolerance. Environmental factors, such as obesity, seem to exacerbate genetic predispositions. PCOS is a diagnosis of medical interest, as associations with important non-communicable diseases have been made-notably, the metabolic syndrome. This comprises: insulin resistance, obesity, hypertension and dyslipidaemia, which significantly increase the woman's risk of cardiovascular disease.[3] This makes extensive evaluation of PCOS of wider interest, much beyond its role in infertility. Prevalence of polycystic ovaries in western world is approximately 10-26% in reproductive age group women.[4] Polycystic ovary syndrome is the most common endocrine disease in women of child-bearing age. The prevalence ranges from 9% when the NIH (National Institutes of Health) criteria are used to even 18% according to the guidelines of the Rotterdam consensus.[5] This study was aimed at documenting prevalence of polycystic ovary syndrome in women of child bearing age, who had undergone transvaginal ultrasound at Department of Radiodiagnosis in NSCB Zonal Hospital Mandi. **Methods:** This was a retrospective study of 259 transvaginal ultrasound scans performed at Department of Radiodiagnosis in NSCB Zonal Hospital Mandi. All obstetric ultrasounds were excluded. All scans were performed using a 5.0 MHz transvaginal probe(SIEMENS ACUSON). Probes were properly sheathed with lubricated latex condoms before use. Data were analysed with IBM SPSS Statistics 20 by simple frequencies and means. **Results:** As per Rotterdam criteria, about 40 patients, a proportion of 16% had polycystic ovaries (Fig. 1). Most of these patients were in the age group of 20-29 years with a mean age of 26+/-5 years. Infertility(37%) was the most common indication for TVS, followed by oligomenorrhoea(29%). Table 1 shows the indication. About 22 patients had unilateral polycystic ovaries, the rest 18) had bilateral. Using the current features on Rotterdam criteria, at least 12(30%) patients had polycystic ovary syndrome.

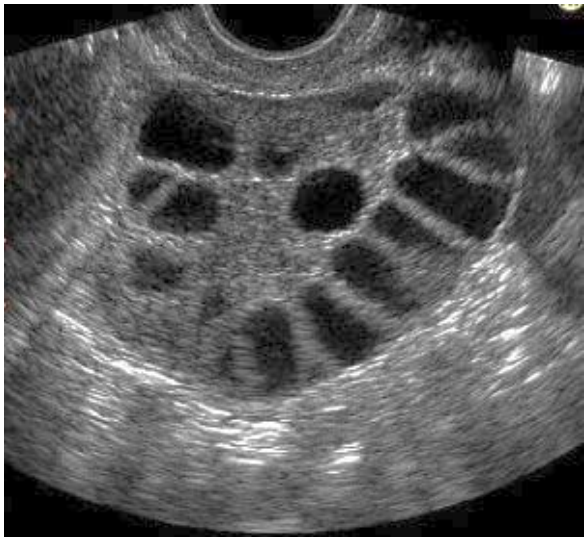

Figure 1: Trans-vaginal ultrasound scan showing multiple peripherally arranged follicles with central echogenic stroma.

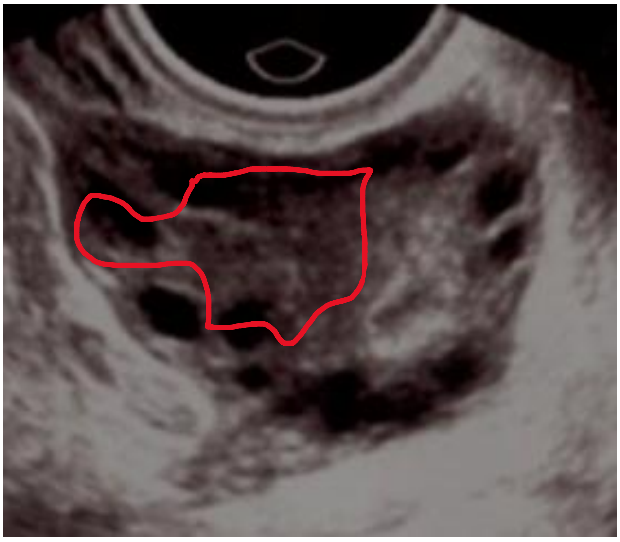

Figure 2: Trans-vaginal ultrasound scan showing central echogenic stroma in a case of polycystic ovary syndrome.

Table 1.

Indications	No(%)
Amenorrhoea	19(7.6%)
Oligomenorrhoea	75(29%)
Infertility	95(37%)
Lower abdominal pain	15(5.9%)
Uterine/Ovarian assessment	47(18.1%)
To rule out pregnancy	15(5.9%)
Dysfunctional uterine bleeding	10(3.8%)

DISCUSSION

About a sixth of the women in this series had polycystic ovaries, while a third fulfilled the limited available criteria for PCOS. This indicates that the syndrome may be more common than was previously diagnosed in the study environment.[6] Currently, the sonographic assessment of ovaries is one of the obligatory criteria in the diagnosis of PCOS according to the Rotterdam consensus (2003) and Androgen Excess & PCOS Society (2006)(Table 2). The sonographic features of PCO, as included in the Rotterdam criteria, are currently identified in 50% of the general population of women. Considering the results of studies, it has been shown that the presence of PCO features in healthy women of child-bearing age is not associated with significant metabolic disturbances, but a slight increase in anti-Mullerian hormone and androgen levels, compared with women with the normal ovarian structure, can be observed. The presence of PCO in the population of adolescent patients frequently coexists with menstrual disorders and acne. A limitation of previous assessment might have been due to the use of the transabdominal ultrasound route, which is not as sensitive as the transvaginal probe for evaluating the pelvis; and particularly the ovary. This will suggest that PCO prevalence has not necessarily increased; but rather the sensitivity of the diagnostic measure improved. If, however, the prevalence did increase, it may be due to an association with an increase in obesity and impairment of glucose intolerance that is emerging in the study environment. Lifestyle changes have occurred over the years: modern occupations are more sedentary, more people have cars and therefore walk less, and there is a surge in availability of fast food outlets and increase in refined sugar in diet. Obesity is not the cause of PCOS, of course; however, simple obesity is also associated with insulin resistance, and can therefore initiate the cascade of hyperinsulinemia, excess androgen production and anovulation.[7]

Table 2: Diagnostic criteria for polycystic ovary syndrome.

NIH 1990	ROTTERDAM 2003	AE-PCOS Society 2006
Chronic anovulation Clinical and/or biochemical signs of hyperandrogenism (Exclusion of other aetiologies) Both criteria are necessary to establish diagnosis	Oligo- and/or anovulation Clinical and/or biochemical signs of hyperandrogenism Polycystic ovaries (Exclusion of other aetiologies) Two of three criteria are necessary to establish diagnosis	Clinical and/or biochemical signs of hyperandrogenism Ovarian dysfunction (oligo- and/ or anovulation) and/or polycystic ovaries (Exclusion of other aetiologies) Both criteria are necessary to establish diagnosis

It has been suggested that the presence of polycystic ovaries alone should alert clinicians to advise women to avoid weight gain, which causes a worsening of the syndrome and greater long term morbidity.[8]

CONCLUSION

To conclude, it must be emphasized that the influence of the development of new technologies in the sonographic assessment of PCO features is undoubtedly noticeable. This process has caused an increase in the percentage of diagnoses of PCO and PCOS since the Rotterdam criteria were published. Presence of polycystic ovaries alone should alert clinicians to advise women to avoid weight gain. Role of life style modifications and Metformin in the management of polycystic ovary syndrome is important. Early diagnosis and prompt management of polycystic ovaries and polycystic ovary syndrome can alleviate significant morbidity associated with this syndrome and can significantly improve quality of life index.

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