OMICS Journal of Radiology

Assessment of Poly Cystic Ovarian Syndrome in Female Saudi Population Using Ultrasonography in Najran Province, KSA

Sawsan AA Osman[1*] **and Sabah E Mohammed**[2]

[1]College of Applied Medical Science, Najran University, Saudi Arabia

[2]College of Medicine, Najran University, Saudi Arabia

[*]**Corresponding author:** Sawsan A. A. Osman, College of Applied Medical Science, Najran University. Saudi Arabia, Tel: 00966563795507; Email: sowsnahmed@yahoo.com

Abstract

Polycystic ovary syndrome (PCOS) is considered to be the most common endocrine disorder in women of reproductive age, the assessment of poly cystic ovarian Syndrome in female Saudi population using ultrasonography This Cross sectional clinical study was conducted at the Maternity and Children Hospital and University Hospital in Najran province, Saudi Arabia during the period from January to December 2018. One hundred seventy-six women were examined for PCOS, Ultrasound scans were performed using a GE Healthcare. Ovaries were scanned from the inner to outer margins in both the transverse and sagittal planes.

The results that reveal the correlation between sign and symptoms and infertility, the main symptoms were patients with no signs no sign, pelvic pain, acne, and hirsutism. And the categories of infertility were primary infertility and secondary infertility. For primary infertility, the higher number of patients who had pelvic pain, in 18 and 8 patients, respectively. For secondary infertility, the higher frequency of pelvic pain then patients with no sign in 21 and 18 patients, respectively.

Correlation between US approach and number of follicles, the ultrasound approach was Transvaginal and Transabdominal. And the number of follicles, using TA approach was 0 follicle in 61 patients, < 10 follicles in 38 patients and >10 follicles in 29 patients. The TV approach was 0 follicle in18 patients, <10 follicles in 20 patients and > 10 follicles in 10 patients. The findings of the present study revealed a high prevalence of PCOS among Saudi women that may require urgent health education interventions to prevent the associated consequences. Finally, we have suggested potential areas of translational and clinical research for the future with specific emphasis on hormonal and metabolic aspects of PCOS.

Introduction

Polycystic ovary syndrome (PCOS) is a common endocrine disorder of women, characterized by a heterogeneous presentation of hyperandrogenism and ovulatory dysfunction. PCOS affects 10–18% of women of reproductive age [1]. Insulin resistance (IR) appears to be important in the pathogenesis of PCOS and subsequent metabolic syndrome. The prevalence of PCOS varies depending on which criteria is used to make the diagnosis but is as high as 15% - 20% when the European Society for Human Reproduction and Embryology/ American Society for Reproductive Medicine (ESHRE/ ASRM) criteria are being used [2].

PCOS is a heterogeneous disorder with it's an etiology still poorly understood. However, there is presence of insulin resistance in most of the cases, with compensatory hyperinsulinemia contributing to hyperandrogenism by stimulation of ovarian androgen secretion and inhibition of SHBG production [3]. Environmental and genetic factors have also been implicated in the development of PCOS. PCOS was first reported by Stein and Leventhal in 1935. Until now, there has been no consensus on the absolute defining features of the phenotype. The diagnosis of polycystic ovary syndrome has emerged from relative medical obscurity over the past 25 years. It is only since the late 1980s that focused research efforts have attempted to unravel this common yet complex syndrome. In that time, and particularly over the past decade, the once underdiagnosed condition has gained the attention of practitioners and patients. The result is that more women are receiving the diagnosis appropriately, and evidence about effective treatments is being evaluated. This article provides an update on the care of women with polycystic ovary syndrome. The discussion will be organized around the mnemonic "MY PCOS" to emphasize the multiple separate issues to be addressed in managing this condition [4].

Since 2015, the National Health and Medical Research Council has funded the Centre of Research Excellence in PCOS to include development of consistent international guidelines and an extensive translation initiative for PCOS. Several thousand consumers, general practitioners, specialists, allied health practitioners and associated health professionals from around the world spent 2 years developing the first international guideline, accompanied by summaries of the recommendations. [5-8]. The new guideline covers all aspects of PCOS, including updating previous recommendations and adding others not incorporated in the original Australian 2011 guideline [9]. Thirty-seven international and national organizations engaged in and supported the guidelines from 71 countries. Consumers were involved in all stages of guideline development from priority setting to co-designed translation resources. Key changes in the guideline include

refinement of individual diagnostic criteria focusing on improving accuracy of diagnosis; reducing unnecessary testing; increased focus on education, lifestyle modification, emotional wellbeing and quality of life; and emphasizing evidence-based medical therapy and appropriate fertility management.

Transabdominal ultrasound

In recent years, transabdominal and/or transvaginal ultrasound have become the most used diagnostic methods for the identification of polycystic ovaries. Although the ultrasound criteria for the diagnosis of polycystic ovaries have never been universally agreed, the characteristic features are accepted as being an increase in the size (volume) of the ovary due to a greater number of follicles and volume of stroma as compared with normal ovaries [10].

Transvaginal ultrasound

Transabdominal ultrasound has been largely superseded by transvaginal scanning because of greater resolution and in many cases patient preference, as the need for a full bladder is avoided which saves time and may be more comfortable.

Whilst this may be the case in the context of infertility clinics, where women are used to having repeated scans, it was found that 20% of those undergoing routine screening declined a transvaginal scan after first having had a transabdominal scan [11]. The transvaginal approach provides a more accurate view of the internal structure of the ovaries, avoiding apparently homogeneous ovaries as described with transabdominal scans, particularly in obese patients. With the transvaginal route, high-frequency probes (>6 MHz), which have a better spatial resolution but less examination depth, can be used because the ovaries are close to the vagina and/or the uterus and because the presence of fatty tissue is usually less disruptive (except when very abundant).

Materials and Methods

A Cross sectional clinical study was conducted at the Maternity and Children Hospital and University Hospital in Najran province, Saudi Arabia during the period from January to December 2018.

Study population

One hundred seventy-six women examined for PCOS (by clinical and biochemical evidence) and age-matched control women who have no clinical or hormonal abnormalities are also recruited into the study. Subjects' age ranges between 12 and 55, patients had primary infertility, had secondary infertility and were unmarried who had clinical complaint of either: Irregular menstrual cycles in the form of Hirsutism, Acne, Pelvic pain, or obesity. The laboratory findings included hormonal results.

Ultrasound technique

Ultrasound scans were performed using a (GE Healthcare, Voluson-i America), a 2-5 MHz abdominal probe and a 7.5 MHz transvaginal probe, all scans were performed in a private room after getting patient consent. Examination was done by a single senior Radiologist. Each ovary was visualized and anatomic orientation with respect to the utero-ovarian ligament was established. Ovaries were scanned from the inner to outer margins in both the transverse and sagittal planes.

The examination was including ovarian volume, total follicle counts largest follicle diameter.

Discussion

Descriptive statistics for all patients, the data presented as mean, standard deviation, minimum and maximum, were the mean ± STD for age 33.15±9.83 years and BMI 23.62±6.14 kg/cm2. Correlate between age group and FSH hormone were the age group divided to 8 groups and the FSH with two categories normal and low, in this relation the normal FSH was higher at age group 30-34 then 35-39 years in 30 and 23 patients respectively and lowest at group 45-49 and 50-55 years in 7 patients for each age group. And the low FSH was the higher 30-34 age group in 11 patents and lowest at age group 50-55 years in 4 patients.

Correlation between age group and LH hormone, the and the FSH with two categories normal and elevated, in this relation the normal LH was higher at group 30-34 in 31 patients then 35-39 and 40-44 years in 17 patients for each. and lowest at group 12-18, 45-49 and 50-55 years with 5 patients for each. For elevated higher age group was 35-39 years in 14 patients and lower age group 50-55 years in 5 patients.

Correlate between signs and symptoms and infertility, main symptoms was pelvic pain, acne, hirsutism, and there were patients without signs. And the categories of primary infertility and secondary infertility. For primary infertility, the higher number of patients was with pelvic pain, 8 patients in 18 and 8 patients, respectively. For secondary infertility, the higher frequency was with pelvic pain, then who had no sign in 21 and 18 patients, respectively.

Correlate between US approach with number of follicles, were the use of ultrasound approach TV or TA to count out the number of follicles, the Transabdominal approach was 0 follicle in 61 patients, <10 follicles in 38 patients and >10 follicles in 29 patients. The Transvaginal approach for 0 follicle in 18 patients, <10 follicles with 20 patients and 10 follicles in 10 patients. Correlate between FSH hormone with follicle size, were the categories of size normal, less than 10 cm and bigger than 10 cm, the normal FSH hormone level found in 71 patients with no follicles, 21 with size less than 10 cm and 26 patients with size bigger than 10 cm. for low FSH hormone 8 patients were with no follicles, 37 patients with size less than 10 cm and 13 patients with size bigger than 10 cm.

Correlate between LH hormone with follicle size, were the categories of size normal, less than 10 cm and bigger than 10 cm, the LH normal hormone level found in 79 patients with no follicles, one patient with size less than 10 cm and 18 patients with size bigger than 10 cm. for elevated LH hormone level there was no patients with no follicles, 57 patients with size less than 10 cm and 21 patients with size bigger than 10 cm.

Using analysis of variance test for the age with other parameters, the patients age with infertility, menstrual cycles, signs and symptoms, FSH hormone, LH hormone, number of follicles and size of follicles, were the P. Value for this relations show a significant difference between the age with menstrual cycles, sign and symptoms p. value was 0.00 for each, while showed no significant difference in infertility, FSH hormone, LH hormone, number of follicles and size of follicles were the p. value was 0.407, 0.126, 0.304, 0.096 and 0.096 respectively.

Conclusion

Polycystic ovary syndrome is now a well-recognized condition affecting 6%-25% of reproductive-aged women, depending on the definition. Over the past 3 decades, research has launched it from relative medical obscurity to a condition increasingly recognized as common in internal medicine practices. This study also strengthened the hypothesis regarding the presence of a specific phenotype of PCOs among Saudi population, abdominal obesity played a significant role in the development of metabolic changes, irrespective of the PCOS phenotype. Prospective studies are needed to identify which clinical, hormonal, and metabolic characteristics of each phenotype in PCOS may be considered predictive factors for the onset of MetS.

References

1. March WA, Moore VM, Willson KJ, Phillips DIW, Norman RJ, et al. (2010) The prevalence of polycystic ovary syndrome in a community sample assessed under contrasting diagnostic criteria. Hum Reprod 25: 544–551.

2. Sirmans SM, Pate KA (2013) Epidemiology, diagnosis, and management of polycystic ovary syndrome. Clin Epidemiol 6: 1-13.

3. Rojas J, Chavez M, Olivar L, Rojas M, Morillo J, et al. (2014) Polycystic ovary syndrome, insulin resistance, and obesity: Navigating the pathophysiologic labyrinth. Int J Reprod Med 14: 719050.

4. Setji TL, Brown AJ (2008) Polycystic ovary syndrome and type 2 diabetes. In: Feinglos MN, Bethel MA, eds. Type 2 Diabetes Mellitus: An Evidence-Based Approach to Practical Management. Totowa, NJ: Human Press 377-390.

5. Teede HJ, Misso ML, Costello MF (2018) Recommendations from the international evidence-based guideline for the assessment and management of polycystic ovary syndrome Fertil Steril 110: 364-379.

6. Teede HJ, Misso ML, Costello MF (2018) Recommendations from the international evidence-based guideline for the assessment and management of polycystic ovary syndrome. Hum Reprod.

7. Teede HJ, Misso ML, Costello MF (2018) Recommendations from the international evidence-based guideline for the assessment and management of polycystic ovary syndrome. Clin Endocrinol. 89: 251-268

8. Teede HJ, Misso ML, Boyle JA (2018) Translation and implementation of the Australianled PCOS guideline: clinical summary and translation resources from the International Evidence-based Guideline for the Assessment and Management of Polycystic Ovary Syndrome. Med J Aust 209: S1-S23.

9. Teede HJ, Misso ML, Deeks AA (2011) Assessment and management of polycystic ovary syndrome: summary of an evidence–based guideline. Med J Aust 195: S65-S110.

10. Goldstein, G (1990) Incorporating endovaginal ultrasonography into the overall gynaecologic examination. Am J Obstet Gynecol 160: 625± 632.

11. Farquhar CM, Birdsall M, Manning P, Mitchell JM, France JT (1994) The prevalence of polycystic ovaries on ultrasound scanning in a population of randomly selected women Aust. N Z J. Obstet Gynaecol 34: 67-72.