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Review Article

Sonographic Assessment of Primary Infertility in Women having PCOS

Sana Waqar Yousaf[1]

[1]University Institute of Radiological Sciences and Medical Imaging Technologies (UREMIT), Faculty of Allied Health Sciences, (FAHS), The University of Lahore, Lahore, Pakistan

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***Corresponding Author:**

Sana Waqar Yousaf,
University Institute of Radiological Sciences and Medical Imaging Technologies(UREMIT),
Faculty of Allied Health Sciences, (FAHS), the University of Lahore, Lahore, Pakistan.
sanawaqary@gmail.com

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ABSTRACT

PCOS are the major source of infertility in women all over the world. This pattern is common in young women. **Objective:** To find the primary gravidity in women having polycystic ovarian disease by Ultrasonography assessment. **Methods:** In this systematic review data published by Google Scholar, Medline, science direct, pub med, and the obsgyn online library that was requested to be published between 2004 and 2016 using certain MeSH terms. In this methodical study composition, we analyzed 10 cross-sectional studies for the collection of data. **Results:** 10 studies conducted between the years 2004 to 2016 were included in this systematic review. The total sample size was 1863 women age between 18 and 45 years. In this study, Ovulatory Disorders are the major leading cause of infertility in women. Polycystic ovarian disease is related with 75% of the causes of ovulatory infertility. The infertility range is 2 to 5%. Polycystic ovarian disease is the commonest endocrine disorder, affecting 6.6% to 8% of the women of child bearing age. Half of women with polycystic ovarian disease are obese. Hirsutism, menstrual irregularities, acne and gravidity have been shown to be the most depressing symptoms in adults with PCOS. Ultrasound is the only modality for the diagnosis of PCOS, Polycystic morphology revealed the existence of follicle measuring 2 to 9 mm in diameter. The sight of less than and equal to ≥ 12 follicles are seen in each ovary, full number of follicle per ovary scaling 2 to 9 mm in fringe and accelerated ovarian volume is about greater than three centimetre per cube (> 10 cm^3). **Conclusions:** From this methodical review, we conclude that ovulatory stimulation is a major cause of major gravidity. PCOS is associated with 75% of the causes of an ovulatory. PCOS are the commonest endocrine disorder, influence 6.6 to 8% of the women at child bearing age. On ultrasound the sight is less than and equal to 12 follicles are seen in each ovary measuring 2 to 9 mm in diameter with the volume of greater than ten centimetre per cube (>10 cm^3).

INTRODUCTION

Infertility is a Medical Condition in which the involuntary failure to conceive after trying for at least 12 months of commencing unproductive sexual interaction [1]. Gravidity denotes lack of fertility, or an involuntary reduction in the capability to produce children. WHO description on gravidity patients predicated that patients fail to conceive after trying of 24 months or approximately 2 years of duration. Primary gravidity is the complete incapability to conceive ranges from 2 to 5% [2]. Polycystic ovary syndrome is the commonest endocrine complication, attack 6.6 to 8% of women of breeding age [3]. It is correlated with 75% of the source of an ovulatory unfertile [4]. Polycystic ovarian disease is an endocrine disorder in which the ovaries produce abnormal amount of androgens, ovulatory malfunction, and increase amount of prolactin, thyroid disease, and adrenal hyperplasia. Public Health effect and associated reproductive, endocrine, and metabolic attack assertion [5]. 50% of women having PCOS are overweight [6]. Obesity leads to change in type 2 diabetes and glucose tolerance in women having polycystic ovarian disease [7]. Hirsutism, menstrual irregularities, acne and gravidity are most depressing symptoms in young women having PCOS [8]. Polycystic ovaries are presence of 12 immature follicles with 9 mm in diameter, appeared as circular area at periphery with central stoma. It shows a ring like appearance. Immature follicles arrange at periphery [9]. Ultrasonography criteria including enlarge size of ovaries, increases ovarian volume and their

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viscosity with central echogenic stoma. By ESHRE/ ASRM agreement, ultrasound guidelines indicate PCOS as immature follicles size 2 to 9 mm, containing 12 or more follicles [10]. PCOS contain numerous immature recess follicle, the follicles develop duly at periphery and show a ring like appearance, and hence, there's no ovulation do, so gravidity prevalence with polycystic ovaries is veritably high [11]. The Rotterdam procedure requires three components for diagnosing polycystic ovarian syndrome clinical and biochemical High level of androgens, acne, menstrual dysfunction and morphology of polycystic ovaries by ultrasound, after the release of the second cause. International guidelines for PCOS Monitoring [12]. Polycystic ovarian morphology revealed the presence of less then and equal to ≥ 12 follicles in each ovary 2 to 9 mm measuring. Arrangement of PCOS at periphery with enlarged ovarian volume less than 10cm per cube (> 10 cm3) [13].

RESULTS

In this systematic review, 10 studies from the years 2004 to 2016 were analysed. 1863 women between the ages of 18 and 45 made up the entire sample size. According to this study, ovulatory disorders are the main factor in female infertility. Seventy-five percent of the reasons of ovulatory infertility are linked to polycystic ovarian disorder. The percentage of infertility ranges from 2 to 5. The majority of endocrine disorders, polycystic ovarian disease affects 6.6 to 8% of women of childbearing age. Obese women make up half of polycystic ovary syndrome patients. The most discouraging symptoms in individuals with PCOS include hirsutism, irregular menstrual cycles, acne, and pregnancy. The only method for diagnosing PCOS is ultrasound. Polycystic morphology showed that there were follicles with a diameter of 2 to 9 mm. Each ovary has less than and equal to 12 visible follicles, with the total number of follicles per ovary ranging from 2 to 9 mm in the fringe, and the accelerated ovarian volume is approximately greater than three centimetres per cube (> 10 cm3).

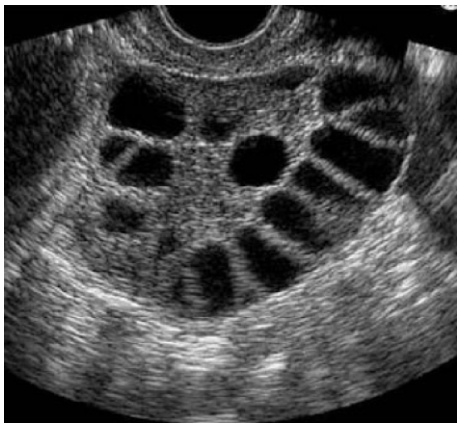

Figure 1: Ultrasound image of polycystic ovary (PCOS)

DISCUSSION

Hussein et al., conducted a study on "prevalence of PCOS in Kurdish infertile women". to examine and contrast the factors, clinic examination, biochemical and ultrasound examination of sterile female and outside for PCOS. A patient who went to an infertility care and the IVF Centre in Erbil City, Northern Iraq, in the Kurdistan region was examined for clinical and ultrasonography characteristics of sterile female with and on PCOS. Its result was collected in a data collection form, 320 sterile female aged 18 - 45, tested for clinical examination (oligomenorrhea, amenorrhea, hirsutism), body mass index (BMI) and hormonal procedures. To diagnose ovarian morphology transvaginal ultrasonography was used. PCOS were found to be 33% prevalent. There was an appreciable difference between two groups regarding oligomenorrhea, amenorrhea, hirsutism and features presented in pelvic ultrasound. There were no considerable differences between the two groups concerning interrelation between obesity rates and abortion cases, high level of endrogen and hirsutism and hormonal factors. High prevalence of PCOS were seen among sterile women visiting an IVF facility using the Rotterdam diagnostic method [14]. Al-zemi et al., (2004) conducted a study on "causes of polycystic ovary syndrome in obese women " In this study 270 women with PCOs visit a fertility clinic .Significantly, over weight females presented with oligomenorrhoea p <0.01 along with anovulation p <0.01 than female with standard weight. Over weight in female negatively affects the effect of ovulation stimulation on clomiphene citrate and gonadotropins; 79% of female who had BMI of 18-24 ovulated within 6 months, in comparison to 15.3% of those female with BMI 30-34 (p <0.001) including 11.8% of female who had a BMI ≥35 (p <0.001). The chance of pregnancy along with output had a negative impact on obesity. Overweight has a negative effect on the output of sterility treatment [15]. Haq et al., (2007) conducted research on " biochemical, clinical and ultrasonic characteristics of infertility in women having PCOS " Clinical features were tested of the patients who visited the Aga Khan University Hospital in Karachi and the Concept Fertility Centre also in Karachi. A complete biochemical testing had been performed. Results were obtained through data collection pattern. STo examine the structural appearance of the ovaries ultrasound examination was performed via transvaginal ultrasound .508 of the patients presented pathological features of Poly cystic ovaries. The prevalence of Poly cystic ovary syndrome in obstetrics was found to be 17.6% showing higher over weight (68.5%) and hyperinsulinemia (59%). The most elevated level of morphological abnormalities were visible above the BMI of 30 [16]. Alnakash et al., (2007) conducted a study on "

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polycystic ovarian disease a link between luteinizing hormone, follicular stimulating hormone level and disclosure of disease." A female patient visiting the Institution of Infertility Treatment and Embryo Research Centre was assessed for its implanted clinical features according to her history of menstruation. Ultrasound was done to discover presence of PCOs. Body mass index was tested and entered in the correlation. Blood was collected giving a 4-5 days break for every caregiver to measure serum FSH, LH & mean LH / FSH levels. 59.81% of women were 25-32 years old also 63.55% of the women were overweight (BMI> 25). Other than infertility, the second most prevalent complaint found was hirsutism (64.49%) Although oligomenorrhea is 43.93%, amenorrhea at 22% and with few (6.56%) menstrual cramps. The relationship between the studies volatile as examined by correlation analysis did not result in a statistically significant correlation between luteinizing hormone / follicular stimulating hormone, body mass index and other presentations (hirsutism and oligomenorrhea). No significant statistically significant correlation was seen between LH / FSH ratio, BMI, menstrual pattern and hirsutism. This defies the conventional notion of PCOS that when a patient is obese, he or she becomes high with LH or even severe manifestations [17]. Jonard et al., (2003) conducted a study of " ultrasonography assessment of polycystic ovarian syndrome examined the relationship between hormonal and metabolic features of polycystic ovarian syndrome with the number of follicles per ovary (FNPO)". The examination consisted of 214 female with Poly cystic ovary syndrome in comparison to the 112 female with ovaries that were found normal. All main symptoms for Poly cystic ovary syndrome were examined throughout the first follicular phase. The FNPO measurement of 2 ± 5 mm sized follicles was appreciably more in the PCO compared to controls, whereas it resulted to be identical within a range of 6 ± 9 mm. By using a limit of 12 to 2 ± 9 mm FNPO gives an optimum consistency between specificity and sensitivity. The follicular range of 2 ± 5 mm, showed an appreciable positive relationship between Follicles per ovary and androgen. FNPO range of 6 ± 9 mm was significantly and negatively relation related to the body weight index and insulin level of serum fasting. PCOS were adding the existence of greater than twelve > 12 follicles with a diameter of 2 to 9 mm of both ovaries. Our results also strengthen the view that intraovarian hyperandrogenism stimulates excessive early follicular growth and development may not progress normally due to hyperinsulinism and / or other metabolic effects related with being overweight [18]. Guraya et al., (2013) conducted a study on the "ultrasound features of polycystic ovaries in young Saudi unmarried women. Various clinical studies were conducted at Taibah University Medical Centre Almadinah Almu-nawwarah Saudi Arabia during the period of January 2012 to December 2012. They were tested between the age of 18 to 28 with irregularities menstrual cycle and hirsutism. Of the 201 participants, 108 (53.7%) were seen to have a PCOS average of 21.3 ± 2.1 years. Demographic data, menstrual irregularities and dermatological manifestations observed in 108 PCOS cases are displayed. Ultrasound criteria of 12 or more than 12 follicles measuring 2-9 mm in diameter are the most prevalent diagnostic in 97 patients (89.8%), followed by peripheral distribution of ovarian follicles in 89 (82.8%). Ultrasound diagnostic criteria for PCOS improved the examination of ovarian stroma and the purpose of observation. With each consecutive technological refinement, diagnostic accuracy has emerged from displaying just the total ovarian size to the detection of follicular pattern distribution patterns and subtle text changes in the uterine stroma. The appearance of 12 or more follicles of 2–9 mm shows to be more sensitive to ovary volume or stromal light [19]. Haq et al., (2008) conducted a study on polycystic ovarian syndrome (PCOS) and the infertility association with natural factors such as body mass index and interfamily marriages. Research includes examination of clinical, biological and hormonal aspects of disease. During this study, 203 patients were tested PCOS with morphological and biochemical features. The obesity prevalence was 70%. 59.3% of women were diagnosed with hyperinsulinemia and 52.3% patients were presented with insulin resistance according to the Homeostatic model assessment index. The relationship of oligomenorrhea, family history of diabetes, serum fasting serum levels, insulin resistance and abnormal glucose tolerance tests were obtained. As different variant. From the data, 48% of couples were in first degree of intra family marriages, proposing that there may be a higher genetic predisposition to abnormal metabolic factors other than racial tendencies. The direct relationship between high BMI and family marriages has found to be resistant to insulin, oligomenorrhea and impaired glycaemic control. Number of overweight female increased with the rate of interfamily marriages, put our population at risk [20].

CONCLUSIONS

It is concluded that ovulatory stimulation is a significant contributor to substantial gravidity from this thorough research. Seventy five percent of ovulatory reasons are linked to PCOS. The most prevalent endocrine condition, PCOS, affects 6.6 to 8% of women of childbearing age. Less than 12 follicles, each measuring 2 to 9 mm in diameter with a volume larger than ten centimetres per cube (>10 cm3), can be observed on ultrasonography in each ovary.

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