Original Article

Polycystic ovaries in adolescent girls from Rawalpindi

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Abstract

Objectives: To review different clinical endocrine manifestation of polycystic ovarian syndrome in adolescent girls.

Methods: A descriptive study was conducted in Holy Family Hospital, Rawalpindi, Pakistan from Nov 2001 to Oct 2002. Adolescent girls diagnosed with polycystic ovaries on ultrasound seen in the out patients department for menstrual problems were included in the study. Their body mass index, waist hip ratio, hirsutism scoring was done. Serum FSH and LH were estimated to see the ratio. Descriptive analysis was done using SPSS v.10.

Results: A total of 52 unmarried girls between 15 to 25 years of age were included. Most of the girls were having oligomenorrhea (88%). While overweight girls were 34 (65%) and mild to moderate hirsutism was seen in 46 (88%). Serum FSH:LH ratio was normal in 25 (48%) and raised in 27 (52%). Earliest manifestation was hirsutism, and as body weight increased, there was linear increase in hirsutism and menstrual disturbances.

Conclusion: Polycystic ovarian syndrome is affecting the lives of young unmarried girls. The clinical manifestations are variable with obesity playing the key role.

Keywords: Polycystic ovarian syndrome, Obesity, Hirsutism, Oligomenorrhea, Rawalpindi (JPMA 61:960; 2011).

identified yet and the effect of environmental influences such as weight changes and circulatory hormone concentrations and the age at which these occurred is unknown.[10]

PCOS is thought to be associated with increased weight gain and metabolic disturbances as elevated serum concentration of LH, serum Testosterone, Insulin and prolactin.

As PCOS is a life long and multisystem disorder some researchers also pointed out that adolescents with PCOS scored lower on subscales measuring general health perceptions, physical functioning, general behaviour, and limitations in family activities because of illness.[11]

This study was planned to suggest a need to develop interventions to reduce the distress that patients with PCOS may face as adolescents and young adults.

Patients and Methods

Adolescent unmarried girls who attended the out patients department of Gynaecology unit I of Holy Family Hospital, Rawalpindi, for menstrual disturbances, during November 2001-October 2002, were included in the study. Informed content was obtained from every participant. Unmarried girls with ultrasound reports showing features of PCOS (10 or more cysts, 2-8 mm in diameter, arranged around an echo-dense stroma)[1] were included in this study. The girls who were married, those whose ultrasound report did not show evidence of PCOS and those who did not consent were excluded. Sample size was calculated and determined 52 girls for this study. Detailed history about their menarche, menstrual pattern, menstrual loss, dysmenorrhoea, past and present medical and surgical problems was taken. General physical examination especially their height in meters and weight in kilograms for body mass index, waist and hip measurements in inches, their ratio, hirsutism in Ferriman Gallways scoring system,[12] thyroid enlargement and any other abnormality was noted. Body mass index of upto 23 was taken as normal, between 23 to 25 was taken as overweight, and more than 25 was considered as obese according to the WHO criteria. Ferriman Gallways score of 8 or less was taken as normal and more than 8 was considered as hirsute. Baseline sonography was done in the Radiology Department for the presence of Polycystic ovaries and other pelvic pathology. This was confirmed by the departmental ultrasound. Transabdominal sonography was conducted by using Toshiba's 3.5 MH sonography machine. Girls who were confirmed as having Polycystic ovaries were then advised serum FSH, LH, Prolactin from Pathology Department of Holy Family Hospital, Rawalpindi. Biomeriux enzyme immunoassay (EIA) kits were used for hormonal tests. FSH:LH ratio was then calculated. Serum FSH:LH ratio of 1:3 was taken as raised and below this was considered normal. All data was put on a proforma. Descriptive analysis was then calculated using SPSS version 10.1.

Results

Diagnosed 52 cases of PCOS were included in this study. Their mean age was 17.8 ± 1.65 (14-20 year). The body mass index is shown in Table-1. Age of menarche ranged between 12-17 years (mean: 12.9 ± 1.1). Serum FSH was between 1.3-9.0 mIU/ml (mean 5.1 ± 1.9), LH was between 3.8-32 mIU/ml (mean 13.3 ± 7.6) and Prolactin ranged between 7-38 ng/ml (mean 15.4 ± 8.4). Most of the girls had secondary amennorhoea (76.9%). Oligomenorrhea was found in 15.8% of girls whereas normal menstruation was observed in 7.3% of girls. Table-2 emphasized the presence of disturbances in ratio of FSH and LH. Earliest manifestation was hirsutism, and as body weight increased there was linear increase in hirsutism and menstrual problem.

Table-1: Body Mass Index (n = 52).

	Frequency	Percent
Valid		
Normal BMI uptill 23	9	17.3
Overweight 23-25	3	5.8
Obese greater than 25	40	76.9
Total	52	100.0

Table-2: Disturbed Ratio of FSH and LH (n = 52).

	Frequency	Percent
Valid		
No	9	17.3
Yes	43	82.7
Total	52	100.0

Discussion

Body weight plays a critical role in the initiation, maintenance and successful outcome of reproductive function.[13] Up to 50% of the women affected with PCOS were found to be obese.[14] This study was done to see the proportion and relationship of different clinical endocrine manifestations in young girls diagnosed with Polycystic ovaries. In this study the most common complaint was oligomenorrhea and most of the girls were overweight. Obesity and PCOS have often been linked, and obesity has been found to exacerbate the underlying insulin resistance in PCOS.[15] Obesity has also been linked to increased androgen production and hirsutism in women with PCOS.[16] Polycystic ovary syndrome (PCOS) frequently presents during adolescence and is the commonest cause of menstrual irregularity and hirsutism.[17]

One recent study showed that approximately 50% of women with PCOS are overweight or obese and most of them have the abdominal phenotype. They stressed that obesity may play a pathogenetic role in the development of the syndrome in susceptible individuals. In fact, insulin possesses true gonadotrophic function and an increased insulin availability at the level of ovarian tissue may favour excess androgen synthesis. Obesity, particularly the abdominal phenotype, may be partly responsible for insulin resistance and associated hyperinsulinaemia in women with PCOS. Therefore, obesity-related hyperinsulinaemia may play a key role in favouring hyperandrogenism in these women.[18] Other factors such as increased estrogen production rate, increased activity of the opioid system and of the hypothalamic-pituitary-adrenal axis, decreased sex hormone binding globulin synthesis and possibly, high dietary lipid intake, may be additional mechanisms. Irrespective of the pathogenetic mechanism involved, obese PCOS women have more severe hyperandrogenism and related clinical features (such as hirsutism, menstrual abnormalities and anovulation) than normal-weight PCOS women. In obese PCOS women with the abdominal phenotype, weight loss is associated with beneficial effects on hormones, metabolism and clinical features. A further clinical and endocrinological improvement can also be achieved by adding insulin-sensitizing agents and/or antiandrogens to weight reduction programmes.[19]

In the present study, 65.4 % of the girls had body mass index within the range of overweight Z zone. This is also favoured in the present study that most early symptom and sign in these girls was hirsutism.

Our study showed that serum LH levels were in linear correlation with menstrual problems. Another study also stresses the role of hyperandrogenism in 'programming' of the hypothalamic-pituitary unit to favour excess LH secretion, and encourages preferential abdominal adiposity that predisposes to insulin resistance. Lower LH levels with increasing BMI in women with PCOS has been found by many investigators.[20-21]

In most of the studies it has been seen that girls with premature adrenarche (the onset of pubic hair before the age of 8 years is associated with elevated levels of adrenal androgens and no evidence of true puberty or adrenal dysfunction) may be at increased risk for development of polycystic ovarian syndrome (PCOS).[22] Premature pubarche is not studied in the present data. Some researchers also influenced that because PCOS is associated with a 40% prevalence of abnormal glucose tolerance. Every adolescent patient should be evaluated regularly for glucose intolerance with a 2-hour oral glucose tolerance test and for lipid abnormalities with a fasting lipid profile.[23] One local study on adolescents revealed that weight gain is associated with low work efficiency.[24] Primary prevention of diabetes mellitus and cardiovascular disease by lifestyle modification, including regular exercise and a balanced diet, is particularly important in adolescents, who have the opportunity to establish healthy habits before entering adulthood.[25]

Conclusion

Polycystic Ovarian syndrome, a common problem of women of reproductive age group is affecting their life physically, mentally and socially. Obesity plays a leading role.

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