PCOS: ANALYSIS OF SYMPTOMS AND MANAGEMENT IN A TERTIARY HOSPITAL

Jahnavi Esanakula[1], Vanaja Kandluri[2], Suma Varsha[3], Usha Brindhini[4], Pallavi Tapala[5], Veronica Thunga[6]

[1]Senior Resident, Department of Obstetrics and Gynaecology, Sri Venkateswara Institute of Medical Sciences, Tirupati.
[2]Associate Professor, Department of Obstetrics and Gynaecology, Sri Venkateswara Institute of Medical Sciences, Tirupati.
[3]Assistant Professor, Department of Obstetrics and Gynaecology, Sri Venkateswara Institute of Medical Sciences, Tirupati.
[4]Assistant Professor, Department of Obstetrics and Gynaecology, Sri Venkateswara Institute of Medical Sciences, Tirupati.
[5]Senior Resident, Department of Obstetrics and Gynaecology, Sri Venkateswara Institute of Medical Sciences, Tirupati.
[6]Senior Resident, Department of Obstetrics and Gynaecology, Sri Venkateswara Institute of Medical Sciences, Tirupati.

ABSTRACT

BACKGROUND

The objectives of the study are- to assess various symptoms and the pharmacological agents used for the management of polycystic ovarian syndrome and their effectiveness at tertiary care hospital.

MATERIALS AND METHODS

It is a hospital based retrospective study. Retrospective analyses of OPD records of patients were collected and their symptoms, treatment and follow up noted and analysed.

RESULTS

Most of the subjects were between 15-20 yrs. age. 40% of the study subjects were overweight. 72 women had irregular menstrual cycles. Medroxyprogesterone and norethisterone were the progesterones most commonly used. Combined oral contraceptives with cyproterone and levonorgestrel were also used in PCOS. Tranexamic acid, mefenamic acid ad metformin were the non-hormonal agents used.

CONCLUSION

In our study we conclude that polycystic syndrome is predominant in young age people than in adolescent people group. This leads to increase in risk for infertility, obesity and cardiovascular disease. Hormonal therapy and Miscellaneous therapy are effective in PCOS and over two-third of patients had restoration of their individual symptoms.

KEYWORDS

Polycystic ovaries, hyperinsulinemia, folliculogenesis, acanthosis, hyperandrogenic symptoms.

HOW TO CITE THIS ARTICLE: Esanakula J, Kandluri V, Varsha S, et al. PCOS: Analysis of symptoms and management in a tertiary hospital. J. Evid. Based Med. Healthc. 2018; 5(21), 1601-1606. DOI: 10.18410/jebmh/2018/337

BACKGROUND

Poly cystic ovarian syndrome is one of the most common reproductive endocrine disorder of adolescent age group. PCOS is a heterogeneous condition affecting 7-10% of women worldwide.[1] PCOS is characterized by the presence of multiple cysts on the ovaries which are not harmful, but it may lead to hormonal imbalances. The condition is depicted in figure 1.

PCOS was first reported in modern medical literature by Stein and Leventhal, in the year 1935.[2] A polycystic ovary is defined as having 12 or more follicles (or cysts) within the 2-9 mm range under ultrasound since 1935. Most of the symptoms associated with PCOS appear to be linked with either high androgen or insulin hormone levels collectively, these symptoms became known as "Stein-Leventhal Syndrome" until the 1960 and 1970.

The exact cause of PCOS is unknown. It is multifactorial which includes:

- Genetic predisposition
- Unhealthy diet and
- Lack of physical activity[3]

Clinically, PCOS may manifest as a mild menstrual disorder or a severe disturbance of reproductive and metabolic functions. The three main phenotype characteristics of this condition are-

- Ovulatory dysfunction
  - Chronic anovulation
  - Infertility
- Polycystic ovaries
- Hyperandrogenism
  - Hirsutism
  - Acne
  - Acanthosis

Financial or Other, Competing Interest: None.
Submission 27-03-2018, Peer Review 10-04-2018,
Acceptance 09-05-2018, Published 15-05-2018.
Corresponding Author:
Dr. Vanaja Kandluri,
Associate Professor,
Department of Obstetrics and Gynaecology,
Sri Venkateswara Institute of Medical Sciences, Tirupati.
E-mail: jahnavie3001@gmail.com
DOI: 10.18410/jebmh/2018/337

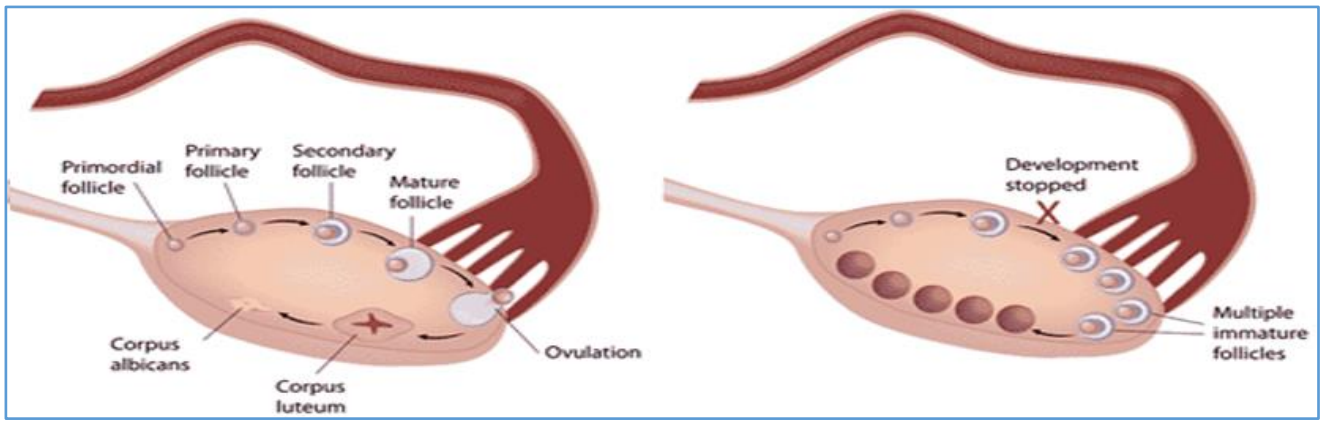

Figure 1

PCOS can also be associated with metabolic issues including obesity, insulin resistance (found in 60-80% of women with PCOS), hyperinsulinemia, and type 2 diabetes mellitus (T2DM). PCOS is associated with cardiovascular problems, neurological and psychological effects on quality of life (including anxiety and depression), and breast and endometrial cancers.

Pathophysiology-

Hypothalamic function is altered, with notable increased pulse frequency of luteinizing hormone (LH) secretion, and a diminished sensitivity to oestrogen feedback inhibition. At the level of the ovary, dysregulated folliculogenesis arrests follicular growth at the mid-antral stage. There is hypertrophy of the theca cells, which are stimulated by LH and responsible for production of ovarian androgens. Both of these findings predispose to polycystic ovarian morphology with multiple peripheral follicles in a string of pearls appearance.

Granulosa cell function under the stimulation of follicle stimulating hormone (FSH) is altered due to relatively lower FSH concentrations in women with PCOS.

Adrenal androgen production is also increased in PCOS. Hyperinsulinemia also directly stimulates ovarian androgen production. PCOS is a heterogenous disease with individual-specific pathophysiology dependent on the individual's phenotype.[4]

Diagnosis

The three main consensuses on PCOS defined the criteria for diagnosis. 1.7.1 The Rotterdam ESHRE/ASRM. Presence of 2 out of 3 criteria.

1. Oligoovulation or anovulation;
2. Clinical or biochemical signs of hyperandrogenism;
3. Polycystic ovaries on ultrasound - at least one ovary of 12 or more follicles with diameters of 2 - 9 mm and/or increase the ovarian size >10 ml (The ESHRE Rotterdam/ASRM, 2004).

In addition to these criteria, other medical conditions that can cause chronic anovulation and androgen excess should be excluded, such as-

- Hyperprolactinemia/hyperthyroidism
- Congenital adrenal hyperplasia, classical and nonclassical form
- Cushing's syndrome; secretory ovarian tumor of adrenal androgens.

1.7.2 The Thessaloniki ESHRE/ASRM—Sponsored PCOS (2006).

According to this association, for diagnosing of the syndrome, two of the following criteria would be necessary

1) Oligo or anovulation and polycystic ovaries on ultrasound.
2) Clinical or laboratory evidence of androgen excess.

1.7.3 The Amsterdam ESHRE/ASRM—Sponsored 3rd PCOS Consensus, 2012.

Most recently defined presence of 2 out of 3 criteria

- Menstrual dysfunction
- Hyperandrogenemia and/or hyperandrogenism.

Therapeutic options include-

- Lifestyle modification.
- Oral contraceptive pills.
- Androgen receptor antagonists.
- Combination therapy (both OCP's and androgen receptor antagonists).
- Insulin-lowering medications (e.g., metformin and thiazolidinediones).
- Topical treatment for hirsutism – Eflornithine hydrochloride.
- Laparoscopic ovarian drilling.

Aim

The aim of the study is to assess various symptoms and the pharmacological agents used for the management of poly cystic ovarian syndrome and their effectiveness at tertiary care hospital.

Objectives

- To identify symptoms of different age groups of patients who are suffering from the poly cystic ovarian syndrome (PCOS).

- To assess the various pharmacological agents and their effectiveness used for the management of Poly cystic ovarian syndrome.

MATERIALS AND METHODS

Methodology

Study Site: Department of Obstetrics and Gynaecology, SVIMS-SPMC (W), Tirupati.

Study Design: Hospital based Retrospective Observational study.

Study Period: One year retrospectively.

Sample Size: 100 patients.

Study Criteria-

Inclusion Criteria

All the females of age group between 15 to 40 years attending the outpatient and inpatient department of Obstetrics and Gynaecology with confirmed diagnosis of PCOS at SVIMS-SPMCW, Tirupati.

Exclusion Criteria

- Patients above 45 years will be excluded from the study.

Ethical Statement

Ethical committee approval will be obtained from the ethics committee before starting the study.

Study Procedure

A Hospital based Retrospective observational study will be carried out in the department of Obstetrics and gynaecology at SVIMS-SPMC (W), Tirupati. This study will be carried out over a period of one year retrospectively.

RESULTS

The study was conducted in 100 patients by obtaining retrospective data from January 2017 to November 2017.

The age group distribution ranged from 15-45 years in 100 patients. 47% were from 15-20 years age group. The mean of age group distribution is 16.6 ± 15.9. The results were depicted in figure 2 and table 1.

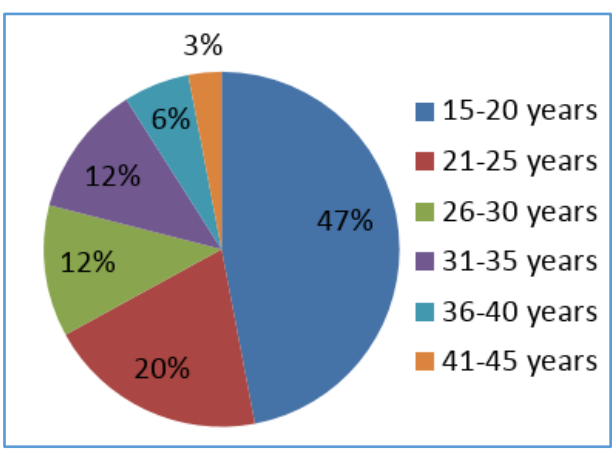

Figure 2. Percentage of Patients Based on Age Group Distribution

Variables	Attributes	Frequency	Percentage (%)
Age	15-20 years	47	47%
	21-25 years	20	20%
	25-30 years	12	12%
	31-35 years	12	12%
	36-40 years	6	6%
	41-45 years	3	3%
Marital status	Married	41	41%
	Unmarried	59	59%

Table 1. Patients Data Based on Age and Marital Status

In this study, 17(40%) people were overweight, 10(23%) were obese, 9(21%) were normal weight, 4(9%) were extremely obese and 3(7%) were underweight. The results were depicted in figure 3.

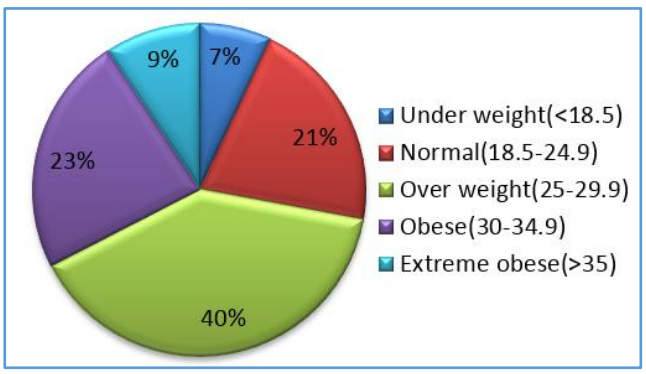

Figure 3. Body Mass Index of PCOS Patients in the Study Group

In this study, many patients had more than one menstrual complaint. 144 menstrual complaints were noted, 32 had abdominal pain, 28 had weight gain, 10 came with infertility, 9 came with hirsutism, 8 complaints of acne and 7 had acanthosis nigricans. The results were depicted in table 2.

Clinical Manifestations	Number of Patients
Abdominal pain	32
Weight gain	28
Hirsutism	9
Acne	8
Acanthosis nigricans	7
Infertility	10

Table 2. Clinical manifestations of PCOS

In this study, the total menstrual complaints were 144. Among them 72(50%) presented with irregular cycles, 24(17%) with amenorrhoea, 18(12%) with polymenorrhoea, 23(16%) with dysmenorrhoea, 7(5%) with oligomenorrhoea were depicted in figure 4 and table 3.

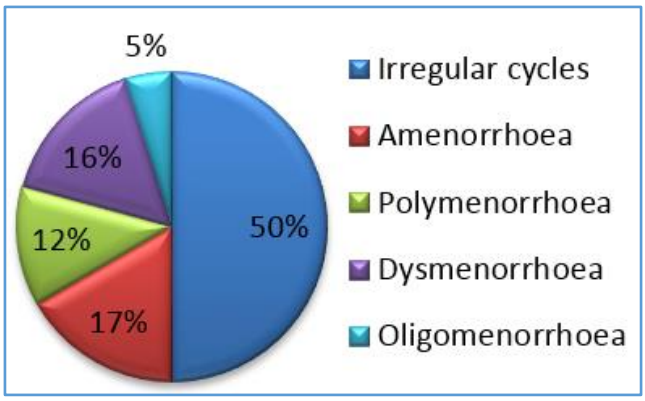

Figure 4. Menstrual Complaints in Study Group

Age group (years)	Irregular cycles	Amenorrhoea	Polymenorrhoea	Dysmenorrhoea	Oligomenorrhoea
15-20	34	14	8	9	4
21-25	15	6	3	5	0
26-30	9	2	4	4	2
31-35	9	1	3	2	1
36-40	4	1	0	0	0
41-45	1	0	0	3	0

Table 3. Menstrual Complaints Based on Age Group Distribution

In this study androgenic symptoms were seen in 25 women. In that 10(40%) had hirsutism, 8(32%) acne, 7(28%) had acanthosis nigricans. Weight gain was noted in 28 women.

Pharmacotherapy:

Hormonal Therapy-

In this study, hormonal therapy was prescribed in 66. In that 49 (46%) were treated with Medroxyprogesterone (40 for withdrawal), 25 (24%) with Ethinyl estradiol + Cyproterone acetate, 24 (23%) with Ethinyl estradiol + levonorgestrel and 8 (8%) Norethisterone were depicted in table 4 and table 5.

Type	Medication	Frequency	Percentage (%)
Hormonal therapy	Medroxyprogesterone	49 (40 for withdrawal)	46%
	Ethinyl Estradiol + Cyproterone Acetate	25	24%
	Ethinyl estradiol + Levonorgestrel	24	23%
	Norethisterone	8	7%

Table 4. Percentage of Patients Based on Hormonal Therapy

Age groups (years)	Medroxyprogesterone (withdrawal excluded)	Ethinyl estradiol + Cyproterone acetate	Ethinyl estradiol+ Levonorgestrel	Norethisterone
15-20	0	15	14	7
21-25	1	7	4	0
26-30	4	3	2	0
31-35	2	0	4	1
36-40	2	0	0	0
41-45	0	0	0	0

Table 5. Hormonal Therapy Based on Age Group Distribution

Outcome of patients based on symptoms with hormonal therapy among 100 patients, the hormonal therapy was given to 66. In that 5, 20 patients attained regular cycles with Medroxyprogesterone and ethinyl estradiol + cyproterone acetate respectively. 10, 5 patients had irregular cycles with medroxyprogesterone, ethinyl estradiol + cyproterone acetate respectively. 18, 15 patients attain regular cycles after cessation of ethinyl estradiol + cyproterone acetate and Ethinyl estradiol + Levonorgestrel. The details were depicted in figure 5.

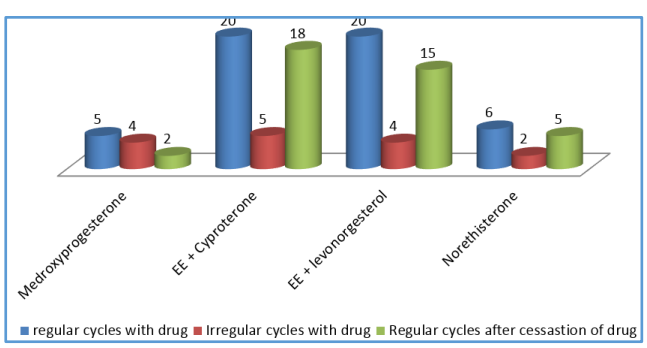

Figure 5. Outcome of Patients Based on Symptoms with Hormonal Therapy

Miscellaneous Drug Therapy

Among the miscellaneous drugs patients, 11(11%) were treated with Tranexamic acid + Mefenamic acid, 33(33%)

with Metformin, 6(6%) with spironolactone, 11(11%) with eltroxin, 26(26%) with analgesics and 13(13%) with antifungals. The results were depicted in figure 6.

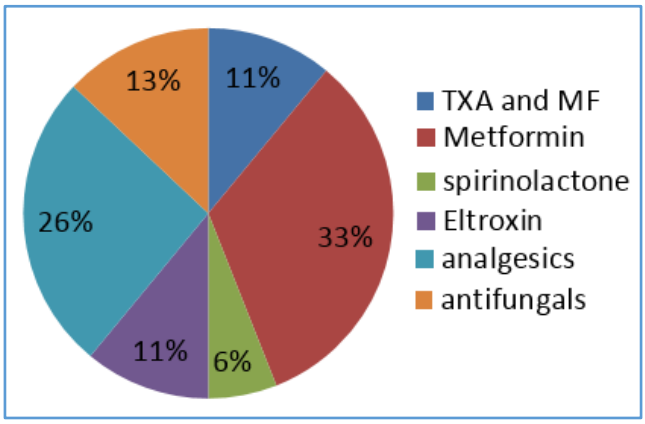

Figure 6. Miscellaneous Drugs Prescribed

Metformin

In this study out of 33 patients, 25(76%) have weight loss and 8(24%) have regular cycles with metformin.

In this study out of 11 patients, 7(64%) were relieved from heavy menstrual flow and 4(36%) were not relieved from heavy menstrual flow with Tranexamic acid + Mefenamic acid.

Spironolactone

In this study out of 6 patients, 4(67%) were relieved from androgenic symptoms and 2(33%) were not relieved from androgenic symptoms with Spironolactone.

DISCUSSION

The study depicts PCOS management in a tertiary care hospital.

Our result is different from that of previous study conducted by Beena Joshi et al.,[5] in which the incidence rate of PCOS 22.5% in 15-24 years age groups according to Rotterdam criteria. In present study the incidence of PCOS is 40% in 15-20 years age groups which shows that its occurrence is more common in young age people. In present study 41% were married and 59% were unmarried. This implies that young and unmarried people are more prone with PCOS.

All age group comparison shows 17(40%) overweight people were more prone to get PCOS rather than 10(23%) obese people when compared to 9(21%) normal BMI. This confirms that PCOS is seen mainly in overweight people.

In present study, we found 50% had irregular cycles, 17% had amenorrhea and 5% had oligomenorrhea were found. In study by Sunitha J Ramanand et al[6] they found 100% had irregular mensus, 65% had oligomenorrhea were observed. This shows that Oligomenorrheic patients and irregular cycles patients were less in present study when compared to previous study conducted by Sunitha J Ramanand et al.[6] The result is shown in figure 7.

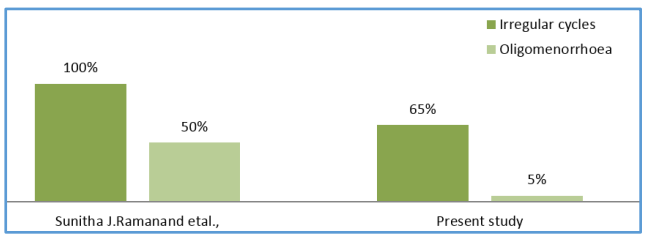

Figure 7. Comparison of Menstrual Complaint Studies

Androgenic symptoms are found to be more in study of Sunitha J Ramanand et al[7] in which they found 53(44.1%) patients had acanthosis nigricans, 53(44.1%) had hirsutism and 24(20%) had acne. The result is shown in figure 8.

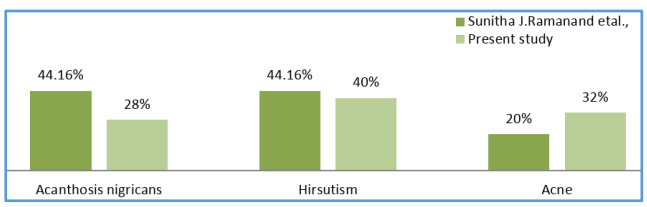

Figure 8. Comparison of Androgenic Symptoms Studies

In the study conducted by Sunitha J Ramanand et al,[6] they found 44.68% married PCOS women had infertility. In present study in 41% married women with PCOS only 25% had infertility complaint. This is probably because of preference of patients with infertility towards specialized infertility centres available in Tirupati.

The use of Ethinyl estradiol and Cyproterone acetate combination shows only improved regular cycles in our study. In study of Dahlgren et al,[7] the use of Ethinyl estradiol and cyproterone acetate combination shows a decrease in both androgenic symptoms and irregular cycles.

Our result is similar to that of previous study conducted by Creatsas G et al.[8] Our results suggested that Ethinyl estradiol and Cyproterone acetate combination was effective for PCOS patients when compared to norethisterone.

In study conducted by Ganie MA et al,[9] 62 patients had relief from hirsutism on treatment with Spironolactone and metformin combination. In present study 6 patients had decreased hirsutism by treating Spironolactone alone.

There was restoration of regular menstrual cycles in 21% of people with metformin and loss of weight in 76%. This confirms that in PCOS women belonging to overweight or obese category will benefit from using Metformin alone with life style changes which will help them to loss the weight.

In study conducted by Bonnar J et al,[10] shows Tranexamic acid and Mefenamic acid combination is effective in treating heavy menstrual flow. In our present study too, shows Tranexamic acid and Mefenamic acid combination is effective in treating heavy menstrual flow.

CONCLUSION

In our study, we conclude that polycystic syndrome is predominant in young age people than in adolescent people

group. This leads to increase in risk for infertility, obesity and cardiovascular disease. So, identifying susceptible individual through symptoms would help to individualize the therapy and prevention from severe life-threatening diseases.

Hormonal therapy and Miscellaneous therapy are effective in PCOS and over two-third of patients had restoration of their individual symptoms. Early diagnosis would help to improve the quality of life among women of reproductive age group.

REFERENCES

[1] Geller DH, Pacaud D, Gordon CM, et al. State of the art review: emerging therapies: the use of insulin sensitizers in the treatment of adolescents with polycystic ovary syndrome (PCOS). International Journal of Pediatric Endocrinology 2011;2011:9.

[2] Stein IF, Leventhal ML. Amenorrhea associated with bilateral polycystic ovaries. AM J Obstet Gynecol 1935;29(2):181-191.

[3] Dennett CC, Simon J. The Role Of polycystic ovary syndrome in reproductive and metabolic health: overview and approaches for treatment. Diabetes Spectr 2015;28(2):116-120.

[4] Barbosa G, de Sá LBPC, Rocha DRTW, et al. Polycystic ovary syndrome (PCOS) and fertility. Open Journal of Endocrine and Metabolic Diseases 2016;6:58-65.

[5] Joshi B, Mukherjee S, Patil A, et al. A cross-sectional study of polycystic ovarian syndrome among adolescent and young girls in Mumbai, India. Indian J Endocrinol Metab 2014;18(3):317-324.

[6] Ramanand SJ, Ghongone BB, Ramanand JB, et al. Clinical characteristics of polycystic ovary syndrome in Indian women. Indian J Endocrinal Metab 2013;17(1):138-145.

[7] Dahlgren E, Landin K, Krotkiewski M, et al. Effects of two anti-androgen treatments on hirsutism and insulin sensitivity in women with polycystic ovary syndrome. Hum Reprod 1998;13(10):2706-2711.

[8] Creatsas G, Koliopoulos C, Mastorakos G, et al. Combined oral contraceptive treatment of adolescent girls with polycystic ovary syndrome. Lipid profile. Ann N Y Acad Sci 2000;900:245-252.

[9] Ganie MA, Khurana ML, Nisar S, et al. Improved efficacy of low-dose Spironoolactone and Metformin combination than either drug alone in the Management of Women with polycystic ovary syndrome(PCOS): a six-month, open-label randomized study. J clin Endocrinol Metab 2013;98(9):3599-3607.

[10] Bonnar J, Sheppard BL. Treatment of menorrhagia during menstruation: randomised controlled trial of ethamsylate, mefanamic acid and tranexamic acid. BMJ 1996;313(7057):579-582.