Case Study of Polycystic Ovary Syndrome - An Overview

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Authors’ contributions
This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: Polycystic ovarian syndrome (PCOS) is also known as polycystic ovarian disorder (POD). The disease is mainly metabolic (hyper androgenic) one. It usually affects women between the ages of 18 and 44. PCOS has no clear origin, although it seems to work at home. It is related to the effects of high levels of hormones in the body, such as high insulin levels.

PCOS affects more than a million people in India each year. PCOS affects one in five Indian women (20%). Left untreated, the disease can lead to serious health problems.

Conclusion: There is no permanent treatment for it since it is an irreversible syndrome/disease. The best way to improve health conditions is to change one's lifestyle and take drugs. One of the most effective methods is to make a healthy food/bad food chart and stick to it with exercise and medicine on a daily basis.

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1. INTRODUCTION

Swollen eggs and small cysts on the edge due to hormonal imbalances. The cause of polycystic ovary syndrome (PCOS), believed to be a combination of genetic and environmental factors, remains unclear. PCOS is the most common endocrine condition of women [1-6]. PCOS is an endocrine disorder that affects several bodily functions, causing growth, metabolic and psychological problems [7].

After observing a woman with abnormal menstruation, obesity, and hirsutism, as well as cysts in her ovaries, Stein and Leventhal discovered PCOS in 1935. These women were once called "freaks" or "bearded women / ladies" a decade ago. Estrogen, progesterone, testosterone, and androgen are hormones thought to be uncontrollable during PCOS [8].

1.1 SYMPTOMS [2]

- Irregular menstruation
- Excess hair growth
- Acne and obesity.

1.2 People May Also Experience

- Menstruation: Menstruation irregularities, extreme menstruation, intermittent menstruation, brief and mild menstruation or bleeding is all symptoms of abnormal menstruation.
- Weight: Obesity or weight gain.
- Infertility, wrinkles, dark spots of skin in folds and creases, sadness, inappropriate male characteristics, hair loss on the scalp, dirty skin, or unwanted hair are also examples of infertility [8-10].

1.3 Impact of Unmanaged PCOS on short- and long-term health problem: [11-14]

- Type-2 Diabetes: Since PCOS patients' bodies are insulin resistant, they are four times more likely to be diagnosed with type-2 diabetes.
- Infertility: - due to abnormal hormonal level the women's don't get pregnant naturally.
- Cardiovascular diseases: Clogged blood vessels can cause blood clots, which can lead to a stroke.
- Obesity: - because of irregular menses the weight begins to gain.
- Sleep apnea (disrupted breathing in sleep):- a condition in which breathing stops during sleep and increases the risk of heart failure.
- Non-alcoholic fatty liver disease
- Depression: - due to the absence of sleep and hormonal changes they are more likely to get in depression.
- High cholesterol: - high LDL and low HDL cholesterol are increasing the risk for heart disease.
- high BP:- which can damage the heart, brain and kidneys
- Acne
- Endometrial cancer: - increasing endometrial line due to the absence of regular periods.
- Pelvic pain:- ovarian cysts causes pelvic pain.
- Hirsutism: - excess hair growth, irregular period.
- Alopecia: - thinning of hair

2. CASE REPORT

In 2001, a fifteen year old girl was evaluated with obesity and amenorrhea. The patient was the third child of his parents who were moderate in weight but both had asthma, hypercholestromia, and were tolerant of glucose tolerance. Her mother was diagnosed with diabetes after giving birth. Both brothers were of normal weight. At the age of eight, the patient began to gain weight in the 50-70 percent, but his height was stable. At the age of 14, she began to experience menstruation. It quickly spread to secondary amenorrhea. According to BMR and BMI, the patient was overweight. The patient was diagnosed with a hirsute and had a moderate rash.

Her testosterone and luteinizing hormone levels were high, but her follicle-stimulating hormone and estradiol levels were stable and within normal limits. This indicated a problem with glucose resistance. Her lipid profile was shown to be pathological, with high total cholesterol, low density lipoprotein (LDL) cholesterol, and triglycerides.

She was also examined by a dietitian and physiotherapist, with advice on how to improve
her diet and lose weight through exercise, as well as a prescription from Metformin. Her fasting rate was normal after a year, and her lipid profile has changed. Men’s are normal without progesterone treatment, but polycystic ovaries remain the same. The woman was still taking Metformin after 4.5 years, despite being overweight and having trouble controlling her weight.

Table 1. Baseline serum gonadotropins, testosterone, estradiol, and progesterone levels

| Parameters     | serum | Reference range |
|----------------|-------|-----------------|
| FSH (IU/L)     | 4.98  | 3.3-6.06        |
| LH (IU/L)      | 10.91 | 4.8-10.73       |
| Testosterone (nmol/l) | 3.87  | 0.42-2.05       |
| Estradiol (nmol/l) | 0.176 | 0.143-0.324     |
| Progesterone (nmol/L) | 2.8   | <4.4            |

2.1 Learning Points from the Above Case Study

- PCOS is common in adults with the irregular menstrual cycles and gained weight.
- Metabolic abnormalities are a common feature of PCOS.
- A lifestyle change is most important key point to manage the syndrome.
- Metformin can manage the PCOS at adolescent age but consuming it for a long time can cause side effects.

3. DISCUSSION

3.1 Diagnosis [15]

There’s no test to definitely diagnose PCOS: A physical evaluation is performed, as well as other prescribed tests such as a pelvic exam, blood count, ultrasound, blood pressure, glucose resistance, and cholesterol and triglyceride levels, which are all checked on a regular basis.

3.2 Treatment [1]

PCOS is irreversible. The main treatment involved is lifestyle changes and medications.

Lifestyle changes means pursuing healthy habits: The healthy habits include a clean and proper diet, healthy eating, avoiding junk and processed food, exercising 4 days in a week, have a sound sleep, cutting off sugar and stressing less.

Losing a 5% of body weight also helps in improving your health conditions.

The ideal weight is also important for lowering risk factors. Maintaining a healthy weight can lower insulin and androgen levels, as well as decrease or restore ovulation.

Foods to be added in your diet are high fiber vegetables, lean protein, anti-inflammatory foods and spices such as turmeric.

There are some foods to avoid that are foods high in refined carbohydrates, such as white bread, muffins, pastries, sugary desserts, and anything made with white flour.

There are some alternatives too pasta made from bean or lentil flour instead of wheat flour are an excellent alternative.

Meditation helps in reducing the stress and balancing the hormones. Aerobic exercises and yoga may also help to reduce the belly fat caused due to PCOS.

To keep weight under control following healthy habits are followed:

i. High fiber and low sugar diet

ii. To prevent an insulin surge, eat 4-6 small meals during the day rather than three big meals.

iii. Exercise at least 30 minutes a day.

3.3 Medication [1]

The combination of birth control pills is prescribed to control the menstrual cycle. Estrogen-containing and progestin-containing pills reduce androgen activity while regulating estrogen. Hormone control reduces the risk of endometrial cancer and eliminates irregular bleeding, excessive hair growth, and acne.

Progestin therapy also helps in regulating period and protects cause of cancer. For ovulation oral anti-estrogen medication called clomiphene is recommended. Metformin this oral medication helps in improving type-2 diabetes and also helps in weight loss.

The hormone medication given by injection is gonadotropins.

To reduce hair growth birth control pills are recommended.
Table 2. Enlisting of food sources to be added in a PCOS diet

| Foods to add                  | High fiber foods | Lean protein | Anti-inflammatory |
|-------------------------------|-----------------|--------------|------------------|
| Cruciferous vegetables        |                 | Tofu         | Tomatoes         |
| Greens and red peppers        |                 | Chicken fish | Kale             |
| Beans and lentils             |                 |              | Spinach          |
| Almonds                       |                 |              | Olive oil        |
| Berries                       |                 |              | Fruits such as blueberries, and strawberries |
| Sweet potatoes                |                 |              | Fatty fish high in omega 3 fatty acids, such as salmon and sardines |
| Winter squash                 |                 |              |                  |
| pumpkin                       |                 |              |                  |

Metformin: It is the only medication prescribed as a long term but, the main side effect related with Metformin are gastrointestinal symptoms like nausea, diarrhea, flatulence, bloating of stomach, anorexia and abdominal pain.

Another method of medication which has been followed since ancient time is ayurveda.

Ayurveda: On the other hand ayurveda is the only system in the world to be preventive as well as curative, the only factor is the length of the treatment will vary upon how chronic is the pcod level and size of ovary.

The plant based herbs that helps in betterment of PCOS are as follows:
- Chaste berry: - improves progesterone level and reduces facial hair.
- Red Raspberry: - tones the uterus and regulates cycle.
- Asoka: - anti-inflammatory agent which boosts estrogen levels.
- Shilajit: - Loaded with Minerals supports Uterine Functions.
- Aloe Vera: - helps in getting acne free skin and also cleanses the skin.
- Rhodiola Rosea: - increases Fertility and Alleviates stress.

4. CONCLUSION

Women’s with PCOS, particularly those with IR present a significantly decreased BMR. As mentioned earlier, there are many unanswered questions about PCOS.

However, various studies are being conducted on this subject and look forward to various aspects. Some experts are looking for possible causes, while others are trying to determine which foods and exercise is most effective in controlling or treating PCOS. While some are looking for ways to avoid suffering from PCOS.

As it is irreversible syndrome /disease there’s no permanent cure for it. Lifestyle change and medication is the only option left to improve health conditions. One of the best ways to do is create a good food/bad food list and follow it regularly with exercise and medication.

ETHICAL APPROVAL

Ethical clearance taken from institutional ethics committee

CONSENT

As per international standard or university standard, patient’s written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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