



Case Report

Successful conception in a patient with PCOS using the integrated approach: A case report

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ABSTRACT

Polycystic Ovary Syndrome (PCOS) is a condition that affects women of reproductive age resulting in hormonal, reproductive and metabolic abnormalities with an associated constellation of symptoms including disturbed menstrual cycle, hyperandrogenism, acne, weight gain, hair loss, diabetic predisposition, depression, mood swings and sub-fertility. Although a very complex disorder, PCOS can be managed optimally in some cases with the help of lifestyle intervention, nutritional therapy and Ayurveda. The subject of this study was a 30-year-old obese female with a clinical history of PCOS due to which she was unable to conceive. Her blood tests showed hyperinsulinism and borderline high cholesterol. She had low immunity and low energy coupled with high stress levels.

The purpose of this case study was to determine the benefits of an Integrated Approach, that included nutritional therapy, ayurvedic herbs, vitamins, minerals, lifestyle modifications, along with exercise and counselling, in the management of PCOS and its comorbidities.

During the 12-week treatment with the Integrated Approach, the patient lost 6 kg weight, felt more energetic, had reduction in fasting serum insulin levels, improved body composition, improved immunity and reduced stress that culminated in a successful pregnancy.

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1. Introduction

Polycystic ovary syndrome is the most common cause of anovulatory infertility (infertility due to the ovaries not releasing an oocyte during a menstrual cycle), affecting reproductive-aged women.¹ Diagnostic criteria of PCOS includes clinical signs of hyperandrogenism, menstrual irregularities, and sonographic evidence of polycystic ovaries; however, obesity and impaired glucose tolerance are also common indicators.²

Apart from affecting a woman's fertility, PCOS is also associated with metabolic disorders like increased risk of type II diabetes, hypertension, chronic heart diseases, dyslipidemia and obesity. Due to these reasons, PCOS at any age requires immediate attention and prompt treatment.³

To increase chances of a successful pregnancy, it is imperative to first determine which set of symptoms the

patient is exhibiting and accordingly provide appropriate treatment regimens, as well as counsel the patient on infertility treatment options. A pre-treatment intervention should focus on improving modifiable risk factors, such as obesity, before attempting therapy with metformin or other medications.¹

Obesity can worsen the PCOS phenotype. It has been observed that obese PCOS patients have more severe PCOS clinical features, such as severe metabolic parameters, hyperandrogenemia and menstrual abnormalities, than do the normal-weight PCOS women.⁴ Obesity can negatively impact ovulation induction cycles too.⁵ Consequently, lifestyle interventions to achieve weight loss in obese PCOS women, have led to improvement in metabolic parameters, menstrual bleeding patterns and ovulation.⁶ Hence, obese women with PCOS are advised to begin treatment by first losing weight.¹

Therefore, in the present case study, an 'Integrated Approach' consisting of a nutrient-rich diet that is low in glycemic index (GI), moderate in complex carbohydrates,

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and protein, along with ayurvedic herbs, exercise and de-stressing was advised to help the patient with weight loss, manage dyslipidemia and lower fasting insulin levels that together helped in successful conception.

2. Case Report

On November 2017, a 30-year-old female, presented at the Health Total centre with a history of PCOS and infertility. She had a history of PCOS since 2014 (for which she was on cholecalciferol and folic acid as prescribed by her gynaecologist). She was anxious to have a child and had been actively trying to conceive unsuccessfully for 3 years. She had consulted multiple gynaecologists during that time without any positive results. The patient had heavy and painful menses that lasted 3 to 4 days. She had premenstrual syndrome (PMS) symptoms as well, such as bloating and abdominal pain. She used to take dydrogesterone (for 15 days every month starting from the fifth day of her menstrual cycle) to manage dysmenorrhea and PMS.

During her recent health check-up, she was diagnosed with borderline cholesterol and high fasting insulin. She had a history of knee ligament tear in May 2017, due to which she suffered from knee pain that increased especially while standing. She sometimes had facial oedema in the morning.

The patient had insomnia along with high stress levels and low energy. She complained of low immunity mainly during seasonal changes and she also complained of hair fall with dandruff. She had a family history of hypothyroid (mother) and hypertension and diabetes mellitus (father).

The patient's pathology test results showed a slightly increased fasting blood sugar, with slightly elevated HBA1c and was on metformin for the same. Her fasting insulin levels were also considerably elevated. She also had dyslipidemia with high total cholesterol (TC), low high-density lipoprotein (HDL), high TC/HDL ratio, high LDL/HDL ratio and high levels of triglycerides. Also, her high-sensitivity C-reactive protein (hs-CRP) levels were very high, indicating inflammatory conditions. 25-hydroxy vit. D3 level was found to be low. Vitamin D helps to reduce the risk of pregnancy complications and also improves ovulatory dysfunction and hyperandrogenism.⁷ Her serum uric acid was also borderline high (Table 1). Her BP was 130/90 mmHg. She weighed 87.9 kg and was 5 feet 1 inch tall. Her BMI was 36.6 kg/m², which falls in the obese range.

2.1. Diet recall

The patient started her day with lukewarm water followed by *khakra* with tea at 8:30 a.m. This was followed by a light breakfast at 10:30 a.m., consisting of either *poha / upma / bread toast*. For lunch and dinner, she would have either two wheat *chapattis* with *dal*, *sabzi* and salad or rice with buttermilk. She would have tea with biscuits for snacks

in the evening. She would have two fruits in a day. She would eat out twice a month, would have non-vegetarian three times a month. She would eat sweets and rice twice a week and fried foods once a week. She liked eating spicy foods and chicken.

2.2. Treatment and follow-up

The patient's first visit at the Health Total centre was in the month of November 2017. Nutritional management consisted of a well-defined diet plan of low glycemic index, high fibre, complex carbohydrate with moderate protein diet with each meal. A regular exercise programme consisting of moderate brisk walking for 30-45 minutes 7 days a week was initiated, but she was irregular with following the prescribed exercise regimen due to knee pain (caused by ligament tear in the past). Along with nutritional therapy, she was advised to take ayurvedic herbs, multi-vitamin supplements, calcium and D3 supplement. She was also given folate supplements to boost her energy levels and to help her conceive successfully. Within 3 months of joining the programme she felt much better and was able to conceive successfully.

3. Discussion

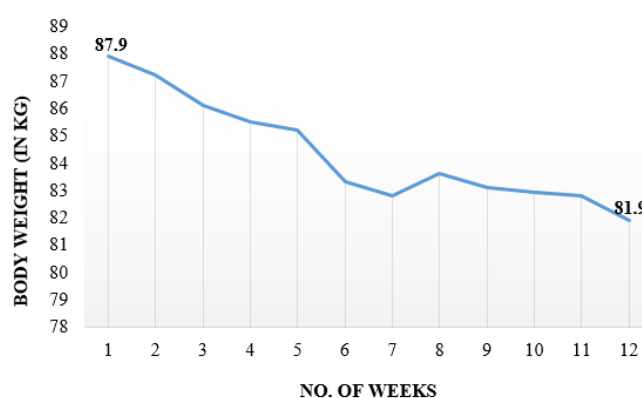
An Integrated treatment approach was used to help the patient manage her PCOS symptoms and facilitate successful conception. The approach also helped in managing her body weight, knee pain associated with ligament tear, energy, immunity and stress levels.

Besides nutritional therapy, Ayurvedic herbs were also given to the patient. An ayurvedic combination of *Bauhinia variegata* with guggul was used for the treatment of ovarian cysts, along with aiding in weight loss.⁹ *Sarac asoca* was used for the management of menstrual disorders and dysmenorrhea,¹⁰ whereas *Berberis aristata* was given for the management of diabetes symptoms.¹¹ *Garcinia cambogia* was used for managing hunger pangs.¹² Nishoth (*Operculina turpethum*) was used to aid digestion¹³ whereas seaweed (a source of natural iodine) helped with thyroid imbalance. A combination of Amalaki (*Emblica officinalis*), Bibhitaki (*Terminalia bellerica*), and Haritaki (*Terminalia chebula*) was used as a mild laxative,¹⁴ and its guggul formulation was used to help with metabolism.¹⁵ *Tinospora cordifolia* in different herbal preparations was used for its immunomodulatory activity and for relieving knee pain.¹⁶ *Withania somnifera* was used for its anti-stress activity and for sound sleep.¹⁷

From the second week of treatment, the patient experienced up to 50% increase in energy levels, as compared to low energy and lethargy that she felt at the start of the programme. In the third week, she reported feeling lighter and following this she reported good energy throughout the 3 months of being on the plan. Within

Table 1: Health parameters of the patient before joining the integrated approach

Health parameters	Test Results	Normal Value
BP (mmHg)	130/90	120/80
FBS (mg/dL)	101	70-100
HbA1c (%)	6.0	<5.7 ⁸
Fasting Insulin (mcU/ml)	38.24	5-24.9
TC (mg/dL)	201	120-200
HDL (mg/dL)	32	33-55
TC/HDL ratio	6.28	3-5
LDL/HDL ratio	4.26	1.5-3.5
Triglyceride (mg/dL)	164	30-150
hs-CRP (mg/L)	10.6	<3.0
25-hydroxy vit. D3 (ng/ml)	24.65	30-100
Serum uric acid (mg/dL)	6.5	5.4-6.2

**Fig. 1:** Effect of the 'Integrated Approach' in the management of body weight

3 months, she lost 6 kg weight (Figure 1) and her BMI decreased to 34.1 kg/m² from 36.6 kg/m². Although she experienced some difficulty in walking due to a ligament tear, she was able to achieve adequate weight loss with the help of the Integrated Approach.

During the third week (5 December 2017) of the patient's being on the programme, the patient underwent intrauterine insemination (IUI), but that was unsuccessful. Following this, during the fifth (19 December 2017) and eleventh (06 February 2018) weeks, her gynaecologist asked her to take human chorionic gonadotropin (hCG) hormone injection to induce ovulation. When there is a mature egg follicle in the ovary, an hCG injection can cause the egg to mature and release. hCG will cause ovulation after approximately 36 hours of injection.¹⁸ Finally, in the month of February 2018 (20 Feb '18), her pregnancy test came back positive.

The patient was consulting a gynaecologist when she had joined us in November 2017, and she had consulted a few gynaecologists in the past, without much success in conception. During the program with us she had an unsuccessful IUI treatment, but after the last hCG injection in February 2018 she responded well to natural conception. This shows that the integrated approach with its functional

foods, ayurveda, low GI, complex carbohydrates, exercise and de-stressing, helped her to lose weight, that helped her body to respond well to hormonal therapy that culminated in successful conception.^{19,20}

According to Cutler *et al.*, "evidence suggests that lifestyle (diet, activity and stress management) influences ovulation and the effectiveness of fertility treatments. Lifestyle intervention is recommended as first-line management for women with PCOS and obesity". He further goes on to say, "literature shows that women with PCOS can significantly benefit from lifestyle changes, specifically, eating a low-glycemic diet, incorporating nutritional supplements, increasing their activity level, and managing stress. Most studies have focused on only one lifestyle-related change, such as diet, as opposed to a more synergistic approach wherein diet, exercise, and stress reduction are combined".²⁰ Therefore, at Health Total, sustainable lifestyle changes are advised and these include a nutritionally adequate diet, Ayurvedic support, vitamins, minerals, moderate exercise and de-stressing, that lead to more positive outcomes and a more sustained sense of well-being.

Symptoms of PCOS can be managed with the right lifestyle that must be sustained throughout life, as going

back to poor lifestyle habits can lead to regression of old symptoms. Also, medicine can be good for short-term therapy, but lifestyle changes bring about a significant improvement in symptoms associated with PCOS.²¹

Studies have demonstrated that by including a low GI diet some health risks associated with PCOS can be reduced. Empirical data shows that a low GI diet can lead to reduced insulin levels, helping normalize androgens, thus improving hirsutism, acne, and helping restore normal menstrual function. Therefore, low GI foods are recommended for both obese and lean patients suffering from PCOS.²² It has also been observed in many women with PCOS that a deficiency of vitamin D may increase insulin resistance²³ and therefore, intake of vitamin D-rich foods and dietary supplements and getting adequate sunlight are all critical.

It is important to note that the patient's diet prior to following the Health Total program was reasonably healthy, apart from the occasional consumption of sweets and fried foods. In the current case, stress might be a contributing factor (as her diet was healthy) to her inability to conceive. Stress and factors associated with it are the unrecognized cause of reproductive dysfunction in the pathogenesis of PCOS. A number of increasing reports state the role of stress in PCOS manifestation.²⁴ Therefore, we at Health Total designed the plan by incorporating high fibre, antioxidant rich, low GI diet plan, to help her de-stress and to manage her PCOS symptoms.

4. Conclusion

The 'Integrated Approach' employed in the current case report was successful in managing the patient's PCOS symptoms. This helped her lose 6 kg of weight (in spite of knee pain due to ligament tear) and resulted in successful conception. Although the patient lost 6 kg weight, her BMI was still in the obese range (obese range $\geq 30 \text{ kg/m}^2$; ideal range = 18.5 to 22.5 kg/m^2). As she had conceived, we stopped her programme.

In the current case study, while being on the integrated approach program, the patient lost around 6.8% of initial body weight, that contributed towards improving her symptoms related to PCOS. This means that the process of diet and lifestyle correction is more relevant than the amount of actual weight lost. When one begins to eat healthy, the body almost immediately starts rectifying itself, of most medical problems. It is important to add that the patient was seen dancing at the clinic when she broke the news of her conception to our doctors at Health Total.

She also reported improvement in energy along with reduced stress levels throughout the programme. Therefore, it can be said that the Integrated Approach benefits several body functions and is an effective tool in the management of PCOS and its concomitant symptoms leading to successful natural conception. It is wise to support your medical treatment with this approach and raise your chances of

conception.

5. Financial support and sponsorship

Nil.

6. Conflicts of interest

There are no conflicts of interest.

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