



**Case Study**

**A CASE STUDY ON AYURVEDIC MANAGEMENT IN INSULIN RESISTANCE IN POLYCYSTIC OVARIAN DISEASE**

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**ABSTRACT**

Polycystic ovarian disease is highly prevalent hormonal and metabolic disorder among reproductive aged women worldwide characterised by hyperandrogenism, chronic anovulation and polycystic ovaries. Insulin resistance is now recognised as a basic underlying pathology of PCOD and found in approximately 50-70% of patients. It is defined as a state in which greater than normal amounts of insulin are required to produce a quantitatively normal response. It is associated with an increased risk of various metabolic disorders including type 2 diabetes mellitus, hypertension, dyslipidaemia and cardiovascular diseases, which indicates that timely therapeutic intervention in PCOS could prevent or at-least delay the onset of type 2 diabetes mellitus and other long-term health risks. Most of the features of PCOD associated with insulin resistance can be found under *Santharpanajanya vyadhis* with involvement of three *Doshas* and *Dhathus* like *Rasa*, *Raktha* and *Medus*. Here is a case report of 18-year-old female who presented with irregular menstruation, rapid weight gain and blackish discoloration of back of neck. Her USG findings shows bilateral polycystic pattern of ovaries. Based on clinical features and laboratory values, treatment principles adopted are *Agni deepana*, *Ama pachana*, *Vatha-kaphahara* and *Lekhana*. *Varanadi kashyam* and *Triphala choorna* with *Takra* given internally for 3 months and *Udwartana* was done externally for 14 days. After 3 months of treatment considerable reduction in weight and improvement in insulin resistance were noticed and her menstrual periods were normal with normal USG findings. The present case signifies the importance of Ayurvedic management in insulin resistance of PCOD to prevent forthcoming complications.

**INTRODUCTION**

Ayurveda has given utmost priority to the reproductive health of a woman as she is considered as the *Apathyamula* (elemental cause of coming generation). So, treating her diseases and keeping the *Sudhayoni* and *Sudha garbhasaya* are very important for the continuation of race. But the change in lifestyle of modern society leads the women to various diseases. Polycystic ovarian disease is one of such diseases occurring due to the altered life style, which not only affect the unique capacity to procreation but also causes menstrual irregularities, changes in

physical appearance such as weight gain, acne, hirsutism etc.

Polycystic ovarian disease is a heterogeneous, multisystem endocrinopathy in women of reproductive age with the ovarian expression of various metabolic disturbances and a wide spectrum of clinical features such as obesity, menstrual abnormalities and hyperandrogenism [1]. It is the most common endocrine disorder among reproductive aged women between the age group of 18-44 years and is prevalent in 30-40% of population. Women often initiate medical care for a cluster of PCOD symptoms such as infertility, hirsutism and irregular menstrual cycles. But the most concerning medical consequences of PCOD include type 2 diabetes mellitus, cardiovascular diseases and endometrial hyperplasia. Although its exact etiology remains elusive, it is known to feature several hormonal disturbances including hyperandrogenism, insulin resistance and hyperinsulinemia.

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Insulin resistance is now accepted as having a major role in basic underlying pathology of PCOD. It is defined as the diminished ability of cells to respond to the action of insulin in transporting glucose from circulation to tissues. It is mainly due to the defects in receptor binding signalling. Diet especially high carbohydrate and high fat, physical inactivity, obesity especially central adiposity, sleep disturbances, stress and other environmental factors plays an important role in developing insulin resistance. It leads to compensatory hyperinsulinemia which in turn causes hyperandrogenism and thus the symptoms of PCOD develop. Features suggestive of insulin resistance of PCOD are Acanthosis nigricans, Fasting serum insulin  $>25\mu\text{IU/ml}$ , Fasting blood glucose to fasting serum insulin ratio  $<4.5$ , Waist to hip ratio  $>0.85$ , BMI  $>25\text{kg/m}^2$  [2]. If left untreated the condition will worsen and lead to many long-term health complications like type 2 diabetes, cardiovascular diseases, metabolic syndrome etc.

In Ayurveda, though exact co relation cannot be made, all the symptoms of this syndrome can be seen in different disease told in our classics. The symptoms bear a resemblance to the conditions described as *Pushpaghni jathaharini*, *Nashtartava*, *Yonivyapat* like *Arajaska*, *Lohithaksaya*, *Vandhya*, *Artavakshaya* and *Ashtartava dushti*. Most of the symptoms associated with insulin resistance of PCOD can be included under *Santharpanajanyavikaras*, *rasa* and *Medo pradoshajavikaras*. Due to *Santharpaneeyakara nidanas*, *Kapha* and *Medus* get

vitiated. *The Medo dhathwagni* is affected by the *Ama* created in the body by excess *Kapha dosha*, which in turn leads to increased *Medas dhatu* or fat in the body this causes obstructions in some of the *Srothes* of the body. *Kapha-medo vrddhi* along with *Agnimandhya* results in *Atisthoulya*. As the *Ama* rich *Medas dhatu* enters deeper into the body and feeds the *Artava dhatu* it leads in to an increase in the formation of tissue within the reproductive system creating cysts. Also, the accumulated *Kapha* in the *Artava vaha srothes* is seen manifested as cyst on the ovary and results subsequent absent menstruation.

PCOS is not a completely curable disease. The women should be counselled about long term health risks and should be periodically screened. The conventional methods of treatments include hormonal therapy and surgical treatment. According to Ayurveda breaking of *Vatha-kapha aavarana*, use of *Pithala upachara*, *Samsodhanam*, use of *Agneya dravyas*, use of *Swayoni vardhana dravyas* and *Nidana parivarjanam* are the main treatment principles [3].

### Case Report

18 year old unmarried girl approached the OPD of Asraya Clinic, Munroe island, with complaints of irregular menstrual periods, gradual weight gain and blackish discoloration over back of neck since 1 year. Her USG findings suggestive of bilateral polycystic ovarian disease (PCOD). She started hormone treatment but discontinued after 2 months

**Family history:** Father hypertensive

### Personal History

|             |   |
|-------------|---|
| Habit       | Sedentary   |
| Diet        | Prefers non-veg food items, regular intake of bakery foods, junk foods, chicken, ice creams, chocolates |
| Appetite    | moderate  |
| Sleep       | disturbed   |
| Bowel       | Normal  |
| Micturition | Regular   |
| exercise    | Nil   |

### Menstrual History

|                    |             |
|--------------------|-------------|
| Age of menarche    | 13 years    |
| Interval           | 90-120 days |
| Duration           | 3-5 days    |
| Cycles             | Irregular   |
| Amount of bleeding | Moderate    |
| Pain               | Mild        |
| Clots              | Nil         |
| LMP                | 2/3/2019    |
| PLMP               | 5/8/2018    |

**General Examination**

Built-obese  
 Weight- 68 kg  
 Height- 158 cm  
 BMI- 27.30kg/cm<sup>2</sup>

**USG Findings**

Anteverted uterus of size 4\*2.6\*4cm with endometrial thickness 5mm. Both ovaries with 12cc volume and polycystic pattern.

**Blood investigation**

Haemoglobin- 12.7gm%, FBS – 79mg/dl, fasting serum insulin -30.39µIU/ml, thyroid profiles were within normal limits.

Insulin resistance calculated was 2.59.

**Ayurvedic Management**

Internal medication for 3 months

1. *Triphala choorna* with *Takra*- 6gm before food at 7 am & 7 pm.
2. *Varanadi kashaya*- 90ml before food 9am & 9pm.

**Externally**

*Udvardana* with *Kolakulathadi choorna* for 14 days.

**Advice**

Intake of green leafy vegetables, avoid junk foods and high calorie diet.

Advised to do exercise daily.

**Follow up and Outcome after 3 Months**

|                        | Before treatment  | After treatment   |
|------------------------|---|---|
| Weight                 | 68  | 62  |
| BMI                    | 27.30   | 24.83   |
| Insulin Resistance     | 2.59  | 3.4   |
| Fasting serum insulin  | 30.39   | 26.1  |
| USG findings (ovaries) | Both ovaries are with 12 cc volume and Polycystic pattern | Right ovary-volume 6 cc<br>Left ovary volume-6.7 cc<br>Normal ovaries |

**DISCUSSION**

*Kaphavardhaka* and *Agnimandyakara nidanas* mentioned earlier causes *Jataragnimandya*, which results in the formation of *Aama annarasa* which in turn causes *Rasadhathwagnimandhya*. Thus, proper formation of *Dhathu* and *Upadhathu* does not occur. *Raja* considered as an *Upadhathu* of *Rasa* it will not be formed properly. Also, *Rasavahasrotho sanga* leads to *Vathavaigunya* and the *Vatha* vitiation occurs due to the *Manasika nidanas* like *Chintha*, *Sokam* etc. This vitiated *Vata* get *Avrutha* by the vitiated *Kapha* in *Arthavavahasrothas* leading to *Arthavakshaya*

*Santarpanoththa nidana sevana* causes *Kapha medo vrddhi* leads to *Jatara agnimandya*, results in the formation of *Sama annarasa* which circulates throughout the body. This *Samarasa* leads to *Dhatwagni mandya* and *Medovaha srotho dushti* due to the *Madhuratarata* and the *Ati-snigdha* property of *Rasa Dhatu*. Thus, there is increase in the *Medo dhatu* leading to *Ati sthoulya*, and also because of the *Avarana* to other *Srotas* caused by *Kapha dosha* there is no proper formation of other *Dhatus*.<sup>[4]</sup>

*Acanthosis* is considered as the important marker of insulin resistance. It can be correlated either with *Karshnya* which is seen in *Vathavrdhi* or with *Neelika* which is a symptom in *Rakthavaha srothodushti*. As *Vathavrdhi* and *Rakthavaha srothodushti* happens in the *Samprapthi* of the disease, these two can be correlated with *acanthosis*.

Main *Doshas* involved in *Samprapthi* are *Vatha* and *Kapha* and so *Vatha-kapha hara cikitsa* should be adopted. Also, as *Medodushti* is pronounced in this disease, *Medohara* can be adopted.

*Samana cikitsa* is done with *Oushadhis* having *Agni deepana*, *Ama pachana*, *Vatha-kaphahara* and *Lekhana* properties. These help in the *Samprapthi vighatana* at *Dhatwagni*, *Doshas*, *Dhathus* and *Srothas*.

*Triphala* has *Kashayarasa pradhana pancharasa*, *Laghu-ruksha guna*, *Anushna virya* and *Madhura vipaka*.<sup>[5]</sup> It is *Tridosahara* and is considered as *Rasayanavara* (best known rejuvenate). It is *Deepana* and thus helps in improving *Jataragni* and *Dhatwagni*. Due to the *Kledo-medo visoshana* property, it brings down the excess *Kleda* and fat accumulated in the body. *Laghu guna* causes *Langhana* and *Ruksha guna* produces *Soshana* of the body. Thus, due to these 3 *Gunas*, *Kleda soshana* occurs thus helps in reducing *Bahudravasleshma* which is the main culprit behind *Prameha*. Also, *Langhana* and *Medo vishoshana* helps in reducing the body weight. Due to the *Mehahara* property it will bring down the hyperglycemia and thus hyperinsulinemia. As IR is considered as the basic underlying pathology behind PCOD, by improving this the symptoms get improved.

*Takra* has *Kashaya-amla rasa*, *Laghu guna*, *Usna virya* and *Madhura vipaka*. It is *Deepana* and *Kapha-vathahara* <sup>[6]</sup>. *Carakacharya* described that there is no medicine better than *Takra* for *Vatha-kapha* diseases <sup>[7]</sup>. Due to almost similar properties of *Takra* with *Triphala*, it helps in the augmentation of actions of *Triphala choorna* when used as *Anupana*.

Drugs of *Varanadi Kashaya* having *Katu tikta rasa*, *Laghu ruksha guna*, *Usna virya*, *Katu vipka*, *Kaphavatha samana*, *Durmedohara*, *Srothosodhana*, *Lekhaniya*, *Chedana*, *Deepana* and *Pachana* properties.

These collectively help to normalise the *Agnimandhya* at *Dosha* and *Dhathu* level. *Durmedahara* and *Lekhaniya* properties help to check the excessive growth and accumulation of *Medodhathu* [8].

*Ruksha udwartana* with *Kolakulathadi choorna* plays an important role in reduction of weight and BMI. *Udwartana* normalizes *Vikrutha kapha* and liquefies *Medo dhathu*. Due to *Usna tikshna ruksha* and *Laghu* properties of drug and *Ruksha udvartana* procedure *Kleda medo visoshana* occurs thus reducing the *Kapha* and *Medhodhathu* [9]

Due to *Tridoshahara* and *Srothovibhandhahara* properties it helps in eliminating *Vatha-kapha avarana* of *Srotases* especially *Arthavavahasrotas* and proper formation of *Arthava* occurs.

Thus, the combined action of *Varanadi Kashaya*, *Triphala choorna* with *Takra* and *Udvartana* must have brought about the significant change in menstrual interval, IR, and BMI.

## CONCLUSION

Polycystic ovarian disease is a heterogenous disorder with uncertain etiology and pathogenesis. PCOD sounds like it is exclusively a disease of ovaries but it actually a full body endocrine and metabolic disorder that is closely tied to insulin resistance. Women often initiate medical care for a cluster of PCOD symptoms such as infertility, hirsutism and irregular menstrual cycles. But the most concerning medical consequences of PCOD include type 2 diabetes mellitus, cardiovascular diseases and endometrial hyperplasia. Although its exact etiology remains elusive, it is known to feature several hormonal disturbances including hyperandrogenism, insulin resistance and hyperinsulinemia. Insulin appears to disrupt the hypothalamo-pituitary-ovarian axis and ovarian insulin resistance results in hyperandrogenemia, which is the main culprit in the clinical picture of PCOD. Early recognition and treatment of the metabolic sequelae of PCOD is essential for the prevention of short- and long-term complications. As it is mainly a metabolic syndrome, the direct correlation of the disease according to Ayurveda is not possible. We can consider some

disease entities like *Prameha*, *Sthoulya*, *Gulma* and *Pushpaghni jathaharini* with different pathological conditions associated with PCOS. While analyzing the *Samprapthi*, we can observe that *Agnimandhya*, *Kaphamedo dushti* and *Kapha-vatha avarana* played a major role in this disease entity and treatment was directed to this line.

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