An Ayurvedic Approach in Management of Polycystic Ovarian Syndrome

Review Article

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Abstract

Polycystic ovarian syndrome (PCOS) is a probably fastest growing endocrinological disorder in females of reproductive age. In PCOS, follicular growth is influenced by hormonal imbalance during the ovarian cycle, leads to affected follicles remain in the ovary. The prevalence of PCOS is estimated 6-10% globally and 3.7% - 22.5% in Indian female population, which is relatively high. It is characterised by hyperandrogenism, anovulation and polycystic ovaries which clinically manifests in the terms of amenorrhea or oligomenorrhea, hirsutism, acne, infertility etc. In present scenario, incidence of this disease increasing exponentially due to sedentary lifestyle and faulty dietary habits. This particular disease is not described word to word in Ayurveda. Associated features of PCOS are closely resembling with Bandhya Yoniypapada, Artavavahasrotasa-Vidhha Lakshana, Nastartava and Ksheenaartava described by Acharya Sushruta and Pushyshani Jatharini and Vikuta Jatharini mentioned by Acharya Kashyap. Maximum congruence of PCOD can be established with Bandhya Yoniypapada. The purpose of this study is to understand Nastartava which is the cardinal feature of Bandhya. Word Artava has been used exclusively in Samhita in context of menstrual blood, ovum and ovarian hormones. Therefore Amenorrhea, anovulation, hormonal dysfunction is considered exposed manifestations of Nastartava. Possible line of treatment is stipulated with Nidanaparivarjan, herbal drugs and Panchakarma procedures.

Key Words: Ayurveda, Artava, Nastartava, PCOS, Herbal drugs, Panchakarma.

Introduction

In today’s era polycystic ovarian syndrome (PCOS) is an emerging endocrinological disorder leading to reproductive as well as metabolic dysfunctions affecting 6-14% of child bearing age of females (1). Polycystic ovarian syndrome (PCOS) also known as Stein Leventhal Syndrome, functional ovarian hyperandrogenism, ovarian hyperthecosis and sclerocystic ovary. PCOS characterised by classical triad of symptoms by hyperandrogenism, anovulation and polycystic ovarian morphology (2). It also has associated comorbidities which include irregular menses, infertility, insulin resistance leads to Type 2 Diabetes and obesity, hirsutism, alopecia, acne, anxiety, depression and sleep apnea, cancer and coronary heart disease (3). The prevalence of PCOS differs according to different diagnostic as well as geographic regions, worldwide it is estimated to be 6-10% or even 15 % when the diagnosis is based on Rotterdam criteria (4). It affects female of age ranging from 18-45 years age (5). In India prevalence is 3.7% to 22.5% reported by the Indian Fertility Society with 9.13 to 36% prevalence in adolescents only (6). It also affects 28% of unselected obese and 5% of lean females (7). Due to wide range of sign and symptoms and different clinical presentation it is underdiagnosed or not diagnosed properly. Due to variability of symptoms patients may seek help from a gynaecologist, dermatologist, endocrinologist or general practitioner and lack of well- defined diagnostic criteria mimics any disease and create illusion for the identification of this common disorder to the clinician. Furthermore, it is more annoying for female because with time distressing aspect of disease changes like from hirsutism, acne as a teenager to infertility as an adult. PCOS is a major cause of infertility in females. In modern modality treatment is symptomatic which includes oral contraceptives, periodic progesterone withdrawal, and metformin, anti-androgen and clomiphene citrate. But they have their own complications like long term use of Mt associated with fatal and nonfatal lactic acidosis, oral contraceptives associated with weight gain, cardiovascular and thromboembolic events and AA associated with hepatic toxicity which could be fatal (8). So, its need of time for safe and cost-effective treatment protocol for this multifactorial disease.

PCOS in Classics

According to Acharya all disease should be examined by Nidanpanchak (five-fold examination) (9). But none of gynaecological disorder described in this manner, there is only explanation of Nidana (Causative factor) and Chikitsa (Treatment). In the same way regarding PCOS, all the associated commodities should be assumed as different pathological conditions of Dosha, Dushya, and Roga Adhishithana. Variation in these constituents results in variation of onset, sign and

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symptoms of disease. In Ayurveda, most of the
gynaecological disorders explained under the roof of
Yoniyyapada although some disorders described
separately. PCOS is not described as a particular
disease, its features closely relate with Bandhvatava
Yoniyyapada, Nastartava and Ksheenaartava told by
Acharya Sushruta and Pushghhani Jatharini and Vikuta
Jatharini told by Kashyap. Its symptoms also similarize
with Artavavahasrotasa Vidhha Lakshana told by
Acharya Sushruta. Acharya Sushruta elaborated
Bandhvatava Yoniyyapada as a condition in which
Nastartava is the main feature (10). He also described
Nastartava separately where they narrated eight
disorders of Artava. In this condition Artava is not
completely destroyed but not apparent due to
obstruction in channels by encircled Vata and Kapha
which results in amenorrhoea (11). In Samhita Artava
word extensively used in context of menstrual blood,
ovum and ovarian hormones.

If we narrate Artava as menstrual blood, in
Nastartava passage of Artava carrying channels is
obstructed due to obstruction of Artavavahasrotasa by
Vata and Kapha Dosha. So Artava is not evident
monthly as in regular menstrual cycle bleeding which
leads to amenorrhoea. In Vikuta Jatharini also female
has irregular menses in terms of time, quantity and
colour which results in lethargy and weakness without
any cause (12).

If we narrate Artava as ovum then we can
consider Nastartava as anovulatory cycles which causes
infertility. Ovum is a microscopic structure and its
presence can be only assumed by its role in conception
(13). Keeping this in view, we can consider Pushghhani
Jatharini as female whose menstrual flow is regular but
cycle is without ovulation. It results in corpulent and
hairy cheeks which are associated comorbidities with
PCOS (14). This condition is seen in PCOS as 30% of
women with PCOS have normal menses (15).

If Artava is considered as ovarian hormones,
the basic pathology of PCOS can be understood in
case of Avarana by Dosha. This Avarana disrupts
homeostasis of HPO axis causing hormonal imbalance
leading to PCOS.

Nidana (causative factors) (16)
PCOS is functional disorder of unclear
aetiology and as such, is a diagnosis of exclusion with
other androgen and ovulatory disorder of clearly
defined aetiologies. We can correlate PCOS with
Bandhaya Yoniyyapada and Nastartava. As in our
classics no specific aetiology is described, so general
causative factors for Yoniyyapada can be considered as
etiological factors:

Mithyachara
It includes Mithyachara (faulty dietary habits)
and Mithayvihara (faulty life style) both. In PCOS we
can include pizza, burger, bread, cold drinks, spicy, oily,
and junk food consumption under faulty dietary habits. It is
found that reproductive age women which are
undergoing rapid nutritional transitions due to
westernized diets and lifestyles prevalence of PCOS
estimated to be 5%-10% in general population (17). A
survey report conducted on 100 subjects concluded
aggravating factors which includes Ahara Nidana like
Aashana, Vishamashana, Ati Madhura Ahara Sevana,
Ati Katu and Vidahi Ahara Sevana and Vihara Jridana
includes Avyaya, Divaswapana, Ratijagraana,
Mutteragdhara and Atichinta, so they can be
considered as Mithyachara in PCOS (18).

Pradushhtartava
The word Artava should be used for ovarian
hormones. As menstrual flow is due to cyclic
endometrial shedding under the regulation of various
hormones of HPO axis. In PCOS ovarian compartment
is the biggest contributor of androgens. Dysregulation of
CYP 17, the androgen forming enzyme in both
adrenals and ovaries may be the main pathologic
mechanism underlying Hyperandrogenism in PCOS.

Bijadosha
Chromosomal and genetic abnormality comes
under Bijadosha. During intrauterine life excessive
exposure to androgens have a permanent effect on gene
expression resulting in PCOS and later to insulin
resistance (19). PCOS is genetically determined
ovarian disorder and the heterogeneity explained on the
basis of interaction of the disorder with other genes and
with environment. Its genetic origins are likely
polygenic and/or multifactorial although low birth
weight and foetal exposure to androgens leads to
development of PCOS phenotype (20). A high
prevalence of PCOS or its features among first degree
relatives is suggestive of genetic influences (21). A
study shown that gene-based association of
polymorphisms in genes involved in steroidogenesis as
well as androgen levels and action which are presumed
to govern PCOS susceptibility and phenotypic
heterogeneity of the disorder (22). Genes like CAPN10,
Cytochrome family p450, Insulin gene, AR, FTO, and
FSHR have strong genetic association (23).

Daiva
Unknown or idiopathic causes comes under
Daiva. Each cause has its own causative process,
potential and mode of action.

Clinical Features
Approximately 85%-90% of women with
oligomenorrhea have PCOS while 30%-40% of women
with amenorrhea will have PCOS (24).

Hirsutism is found in 70% of women with
PCOS which is common presentation of
hyperandrogenism (25).

Acne approximately found in 15%-30% adult
women with PCOS can also be marker of
hyperandrogenism (26).

Infertility affects 40% of women with PCOS.
Approximately 90%-95% of anovulatory women
presenting infertility have PCOS (27). Moreover,
spontaneous abortion occurs frequently in PCOS with
incidence ranging from 42%-73% (28).

Approximately 20% of females experienced
sleep apnea. Depression and anxiety are common
complains (29).

There is an insulin resistance which results in
obesity and Type2 diabetes.
Diagnostic Criteria

National Institutes of Health Criteria (NIH), in 1990 defined and comprises only presence of clinical and/ or biochemical hyperandrogenism and oligo/ amenorrhoea anovulation. Rather than clinical trial it was based on consensus (30). In 2003, the Rotterdam Criteria added polycystic ovarian morphology in ultrasound as a new creation in the two previous criteria of NIH. The European Society of Human Reproduction and Embryology (ESHRE)/ American Society for Human Reproductive Medicine (ASRM) elaborated diagnosis of PCOS mandates two out of three anovulation/ oligo-ovulation, hyperandrogenism (Clinical or Biochemical) and appearance of polycystic ovaries in Ultrasound (31) (in ultrasound criteria for PCOS mandates the presence of 12 or more follicles measuring 2-9 mm in diameter and / or increased volume > 10cc in either of ovary). In 2006, the Androgen Excess Society (AES) finally defined PCOS as hyperandrogenism with ovarian dysfunction or polycystic ovaries. AES considered Androgen excess as a main cause for pathology of PCOS and established that hyperandrogenaemia should be present accompanied by oligomenorrhoea or polycystic ovarian morphology or both of them (32). NIH sponsored an evidence-based methodology workshop on PCOS in 2012, expert panel estimated each criteria has its own strength and limitations; however, considering multiple criteria creates dilemma in understanding PCOS. If PCOS is suspected, complete medical history, physical examinations, haematological tests, and pelvic ultrasound should be advised. The Medical history and physical examination give the information about menstrual cycle’s irregularities, unexplained weight gain, male pattern hair growth, skin changes, unexplained weight gain and raised blood pressure. The haematological tests are performed to assess the hormones, lipids and glucose level and ultrasound is performed for screening ovarian cysts. During assessment other major and potential cause related with endocrine, reproductive and metabolic dysfunctions should be excluded. Before diagnosing PCOS, adrenal hyperplasia, Cushing’s syndrome, and hyperprolactinemia, non-classical congenital adrenal hyperplasia, androgen- secreting tumours and drug-induced androgen excess should be ruled out (33).

Management

The management of PCOS should aim to normalize the menstrual cycle, achieve ovulation, and eliminate hirsutism, acne, to reduce weight as well as manage hyperglycaemia and hyperlipidaemia to lower the risk of cardiovascular disease. Acharya Dalhana mentioned that due to regular menses, as impurities are excreted from woman body constantly, so there are less chances of her to suffer from Prameha (34). As one of the cause of PCOS is hyperinsulinemia, so we can use Pramehghna drugs. Weight loss leads to increasing circulating androgen and glucose levels but also beneficial in ovulation and thus combating the infertility rate in obese females with PCOS. The line of treatment for PCOS patient depends only on the basis of symptoms. So, management for PCOS should be planned with following considerations-

**Nidana Parivarjana**

Nidana Parivarjana (avoid the disease causing factors) for which women should follow the principles of Svasthaya Rakshana like Dincharya (daily regimen), Ritucharya (seasonal regimen), Sadvritta, Achara Rasayana, Hitahara, Sanyaka Nidra (proper sleep of 6-8 hours in night) and Nyayama (physical activity) for prevention of disease. Results of study reported that there are subtle variations in diets, monounsaturated enriched diet results in greater weight loss; low glycaemic diets decreased insulin resistance, fibrinogen, total and high lipoprotein density, improved menstrual irregularities (35).

**Exercise**

Many studies have reported that regular exercise improves menstrual irregularity and insulin resistance. In PCOS, physical activity and exercise for 30-45 minutes showed improvement in body mass index, waist circumference and metabolic parameters such as insulin resistance, total cholesterol and lipid profile. Thereby reducing the metabolic syndrome and other risk factors contributing to PCOS (36).

**Drugs used for PCOS**

**Yashtimadhu**

**Glycyrrhiza glabra L. (Family-Fabaceae)**

Effect of liquorice was investigated on androgen metabolism and it is found that it can reduce serum testosterone might be due to block of 17-Hydroxysteroid dehydrogenase and 17-20 lipase. Therefore, liquorice is beneficial for hirustism and PCOS (37).

**Meshshringi**

**Gymnena sylvestre R.BR. (Family-Asclepiadaceae)**

Studies done Gymnena supplementation reported that it reduces the absorption of glucose in intestines, stimulates beta cell pancreatic growth and insulin release from beta cells (38).

**Shatavari**

**Asparagus racemosus Willd. (Family- Liliaceae)**

Many researches prove that it is beneficial in infertility as it stimulates folliculogenesis, ovulation, prepares the uterus for conception and prevents miscarriages. Its alcohol extract significantly enhances insulin release (39).

**Methika**

**Trigonella foenum graceum L. (Family- Fabaceae)**

Studies on seed extract of Trigonella foenum shown significant reduction in ovary volume and size of cyst. It also showed increase in LH and FSH (40).

**Kumari**

**Aloe vera L. (Family- Liliaceae)**

Experimental studies shown that Aloe Vera decrease the levels of testosterone and insulin through improving the levels of progesterone and estradiol; decreasing the transcription levels of steroid receptors; increasing aromatase expression (41). Aromatase is member of family p450 cytochrome who converts testosterone into estradiol and androstenedione into
It is highly beneficial in gynaecological disorders as it clears the Artavavahasrotasas and pacifies Vayu and promotes follicular maturity.


5. Teede et al., Polycystic ovary syndrome: a complex condition with psychological, reproductive and metabolic manifestations that impacts on health across the lifespan BMC Medicine 2010,8;41


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