Title: Ayurvedic Management of PCOS vis-a-vis of Diabetes Mellitus

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Abstract:
Polycystic Ovarian Syndrome (PCOS) is a multifaceted problem with reproductive, endocrine and metabolic dysfunction. Diabetes Mellitus is a clinical syndrome characterized by hyperglycaemia. The prevalence of this disease in general population is about 5-10% worldwide. Continuous indulging in abnormal diet & life style causes Kapha-dosha vruddhi (aggravation of Kapha) or Jatharagni mandya (weak digestive fire) is resulting in Ama-uptatti leads to PCOS. Therefore it has become essential to understand the etiopathogenesis and to study the basic principle of the treatment of PCOS. In this study, elementary books of Ayurveda and Modern were searched and analyzed for proper utilization in prevention and cure of PCOS. Thus, Ayurveda may play major role to cure PCOS.

Keyword: PCOS, Diabetes Mellitus, Agnimandya, Treatment.

Introduction:
The objective of the present study entitled, “Ayurvedic Management of PCOS vis-a-vis of Diabetes Mellitus.” elementary books of Ayurveda and Modern were searched and analyzed for proper utilization in prevention and cure of PCOS.

Aims and Objects:

Aim
Litarary study of Ayurvedic Management of PCOS vis-a-vis of Diabetes Mellitus.

Objectives
To study aetiopathogenesis & symptoms of PCOS.
To find out line of treatment of PCOS in Ayurveda texts.

Material and Methods
Ayurveda classics, modern literature, research journals were studied and effort was made to understand syndrome.
Conceptual study of PCOS - Modern Review
The term Polycystic Ovarian Syndrome (PCOS) was first described in 1935 by Stein and Leventhal as a syndrome manifested by 'Amenorrhoea', 'Obesity' and 'Hirsutism' associated with enlarged polycystic ovaries. This complex disorder is characterized by excessive androgen production by the ovaries/adrenals.

Incidance varies between 0.5-4 percent. It is prevalent in young reproductive period.

Clinical feature
1. Pt may present with feature of diabetes malietus (insulin resistance)
2. Increase in obesity (abdominal-50%)
3. Menstrual abnormality(70%) in the form of Oligomenorhaea, Ammenorhaea(Absence of menstruation),DUB(Disfunctiona uterine bleeding)
4. Presence of hirsutism and acne(70%)
5. Acanthosis nigricans - it is due to insulin resistance skin is thickened and pigmented affected sides are nape of neck, inner thighs, groin and axilla.

Diabetes Mellitus
It is a clinical syndrome characterized by hyperglycaemia. Hyperinsulinemia is often associated with type 2 diabetes. Insulin is produced by your pancreas and helps regulate blood sugar. Hyperinsulinemia is a sign of an underlying problem. Hyperinsulinemia is most often caused by insulin resistance. It is a condition in which your body is resistant to the effects of insulin.

Polycystic ovary syndrome (PCOS) and the metabolic syndrome have many features in common particularly among women with the highest insulin levels and BMI. Hyperinsulinemia is a likely common pathogenetic factor for both PCOS and the metabolic syndrome.

Metabolic syndrome
High insulin levels are often associated with central obesity, cholesterol abnormalities, and high blood pressure (hypertension). When these disease processes occur together, it is called the metabolic syndrome.

Insulin resistance
It doesn’t happen overnight. When most of your diet includes empty calories and an abundance of quickly absorbed sugars, liquid calories, and carbohydrates like bread, pasta, rice, and potatoes, your cells slowly become resistant to the effects of insulin.

Your body increasingly demands more insulin to do the same job of keeping your blood sugar even. The higher your insulin levels are, the worse your insulin resistance. Your body starts to age and deteriorate. In fact, insulin resistance is the single most important phenomenon that leads to rapid, premature aging and all its resultant diseases, including heart disease, stroke, dementia, and cancer.

Aetio-pathology:
Etiology is multifactorial -
1. Abnormality of HPO AXIS - Pitutary causes, Hypothalalamic causes, Adrenal factor, Thyroid factor, General diseases, stress, Hyper prolactenemia.
2. Genetic inheritance
3. Hyperinsulinemia arising from receptor dysfunction
4. Adrenal/ovarian hyperandrogenananaemia

Pathophysiology
It is the complex multisystem disorder causing dysfunctional of three inter related axes i.e. metabolic, steroidogenic and reproductive. Root causes of PCOS is hyperinsulinemia, it is result of following conditions. Possible effect of hyperinsulinemia on the HPO axis Effect of
hyperinsulinemia on the hypothamus and pituitary.

Hyperinsulinemia → ↑GnRH from hypothalamus → ↑LH and ↓FSH from the pituitary → chronic anovulation. Effect of hyperinsulinemia on the ovary and liver, Increase insulin level creates estrogenic state in the body through the disturbance of ovarian and liver functions as follow.

Hyperinsulinemia → ↑the testosterone and androstenedione in the ovary and ↓the SHBG (steroidal hormone binding globulin) in the liver → ↑ the bio-availability of estrogen in the female body.

Chronic stress and insulin resistance: It elevates cortisol, your main stress hormone. Increased cortisol levels elevate blood sugar and promote the accumulation of belly fat that very commonly seen in patients with insulin resistance or diabetes.

Obesity and insulin resistance: It also induces insulin resistance and hyperinsulinaemia which in turn increases the gonadal androgen production.

Investigations - Clinical Diagnosis is mostly needed. Detail history is important. Treatment varies due to cause.

- General Examination is also important for assessment of nutritional status, extreme emaciation or marked obesity, presence of acne or hirsutes, discharge of milk from the breast.
- Internal examination reveals bilateral cystic ovaries.
- Weight and BMI (Normal BMI – 18.5 to 24).

Laboratory investigations

Sonography – TVS (transvaginal sonography)

Serum values - LH:FSH 1:1 is normal
It is high in PCOS - 2:1 and 3:1
SHBG Level Lower in PCOS
Raised fasting insulin level >25µ/ml in Insulin resistance.
Fasting G:I ratio (Fasting glucose to insulin ratio ) >4.5 is normal. It High in PCOS.

TREATMENT - Weight reduction improves the metabolic syndrome and reproductive function.

1. Management it depends upon the presenting symptoms
2. Management of hyperandrogenanaemia
   A) Combined oral contraceptive pill
   B) To correct hirsutism by correction of metabolic syndrome
3. In modern science only metformin is used to correct metabolic syndrome, it increases insulin sensitivity decreases weight BMI and reduces cholesterol blood pressure and the risk of developing diabetes
4. Ovulation induction and surgery ( when patients desire pregnancy)

In modern science to correct metabolic syndrome only few medicine are available with lots of side effect but in Ayurveda many effective treatments are available with no side effect.

An allopathic medicine doesn’t have cure, but their medicines to manage PCOS/PCOD leads to numerous side effects. If the intake of medicines is stopped PCOS/PCOD reoccurs. Root cause of the problem should be treated and allopathic medicine fails to do that.

Conceptual study of PCOS - Ayurvedic Review

According to Kashyap, Vandhya is called as Pushpghni i.e. having useless pushpa or menstruation (Unovulation i.e. No conception). Hyperandrogenism (hirsutism, acne and male pattern balding). Hirsutism or excessive body hair especially in female is given as a symptom of pushpaghni jataharini described by Kashyapa. Menstrual irregularities
mentioned in context of Anartava, Artavakshaya and Arajska. In all these conditions, menses is delayed or produced in less quantity. Anovulation can be compared to vandya yoni vyapat. “Vandya nashtartavam vidyat”. Here, we can interpret artava as ovum and consider vandhya as anovulatory menstrual cycle.

**Nidana (causative factors)** - 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 Vandhya Yonivyapada and Nashtartava. As in our classics no specific etiology is described, so general causative factors for Yonivyapada can be considered as etiological factors”.

1. Mithyachara
   Under this heading we can include Mithyaahara (faulty dietary habits) Mithyavihar (abnormal life style) both. In PCOS under the heading of abnormal diet we can include pizza, burger, bread, cold drinks, spicy, oily, junk food consumption. Abnormal life style may be faulty habits of sleep (Diwaswapna, Ratrijagrana), stress, competition pressure and other Mansikbhawa. We can see that all these are also causative factors for obesity, which play a very important role in appearance of this particular disease also.

2. *Pradushtartava* - The word Aartva should be regard for ovarian hormones.

3. *Bijadosha* - Various chromosomal and genetic abnormalities come under this heading.

4. *Daiva* - Unknown or idiopathic causes come under this heading. Each cause has its own causative process, potential and mode of action.

**Veshesha Nidan**

According to Sushruta - Atisamshodhan, Atisanshaman, Vega dharan, Asatmyaanna, Manastap, Vyayama, Anashan, Atimaithuna

**Samprapti**

**Apatarpanottha Samprapti** (Probable Pathogenesis of PCOS in lean patients)

The current unbalanced diet and lifestyle cause the vitiation of Kaphadosha which leads to Jatharagni mandya, thereby resulting in Aamotpatti. Which leads to Dhatvagni Mandya especially Rasadhatwagnimandya causes the formation of a Saumya Gunatmak Poshak Rasadhatu having qualitative and quantitative Heen Saarata. It also results in an increase in the Mala Rupi Kapha and consequently in the poor formation of the subsequent Dhatu further causing Dhatukshaya. Thus, Dhatvagni mandya and Dhatukshaya together cause Anartava or Rajakshaya.

**Santarpanottha Samprapti** (Probable Pathogenesis of PCOS in obese patients)

The above stated aetiological factors give rise to Jatharagni and Dhatvagni Mandya along with Aamotpatti resulting in Medoroga viz. Sthaulya (obesity). Aamotpatti and Agnimandya cause an improper nourishment of the consecutive Dhatu. Artava, being the Saptam Dhatu thus becomes Ksheena (under-nourished). The end result is once again Artavakshaya (anovulation).

Thus, it can be stated that Kapha predominance manifests as obesity, sub fertility, hirsutism, diabetic tendencies and hypothermia. Pitta predominance manifests as alopecia, acne, and severe menstrual irregularity.

**Differential Diagnosis**

Ayurveda describes Polycystic Ovarian Syndrome to have an equal involvement of the Dosha, Dhatu and Upadhatu. It does not correlate the condition to a single disease or syndrome but the symptoms bear a resemblance to the terminologies defined as ‘Anartava’ (Amenorrhoea),
‘Yonivyapad’ (anatomical and physiological disorders of the reproductive system) like – Arajaska (Oligomenorrhea due to vitiation of Vata Dosha), Lohitakshaya (Oligomenorrhea due to vitiation of Vata-Pitta Doshas), Vandhya (infertile). Pushpaghni Revati (Idiosyncratic anovulatory menstruation), Abeejata (anovulation). Rajodushthi and Ashtartava Dushti (menstrual flow disorder due to vitiation of Doshas) etc. We found the reference of metabolic involvement in PCOS in our classics i.e. Acharya says that due to monthly menses, as impurities are excreted from woman body constantly, hence, there is less chances of her to suffer from Prameha. It means if leedy has normal menstruation then she has less chance to develop diabetes in letter age because the diabetes is disease of forties at that age the menopause starts and PCOS is the disease of reproductive age. So the root cause of PCOS is obesity and hyperinsulinemia, that’s why the main line of treatment of PCOS is to treat the Agnimandya.

Ayurvedic Management Of Pcos

- Menstrual problems manifest due to aggravation of all tridoshas but mainly due to apanavayu.
- The management approach to PCOS should also concentrate on treating Agnimandhya at Jatharagni and Dhatwagni level and alleviating srotavarodhana and ultimately regularizing the Apana Vata.
- According to Acharya Charak, the treatment aims are not only radical removal of causative factors of Disease, but also restoration of Doshas Equilibrium.
- All the causes of the disorder mentioned in Ayurveda include Sanga (obstruction) Vata Sankshobha and Dhatukshaya. Hence, the main Chikitsa Siddhanta (principle of treatment) for the problem should be the drugs by which the Sanga is removed. Thus the drugs that are Vatashaman, Deepan, Pachan and Anulomana must be used on a priority basis. Vagbhata charya advocates Basti (enema), Abhyanga (oil massage), Shirodhara as the line of treatment. Panchkarma modalities like Vamana (emesis), Virechana (purgation) are also prescribed for vitiated Kapha and Pitta respectively. Snehana (oleation) and Swedana (sudation) need to be given prior to any Panchkarma. This primarily includes selected Panchkarma upakrama (5 major treatment modalities) especially Anuvasan (enema with medicated oil), Niruha (enema with medicated decoction) are more beneficial in this condition.
- Action of Basti is predominantly on Vatadosha and Pakvashaya. Basti cures all the diseases of Vata. Sneha Basti acts as catalyst in absorption of other drugs medicinal properties. Basti is targeted at regulating the Apanavayu it facilitates timely release of ovum and also good production of sperms. It may act on Anovulation. Use of Basti (Enema) is highly beneficial in Infertility. Niruhabasti is like Nector to an infertile woman. The woman having Infertility either of the partners conceives after Anuvasanbasti means it is useful in both male and female partner. The woman having Amnorrhoea, scanty menstruation, non-ovulation or useless ovulation (ovum with minimal or absence of capacity of fertilization) etc. causes of infertility should be prescribed Anuvasanbasti. By use of Basti Yoni becomes healthy, even sterile woman conceives. The Basti is beneficial to woman having repeated abortion. Yapanabasti is performing both the action that is cleansing of Niruha and oleation of Anuvasan. By use of these, the infertile couple gets Progeny. Anuvasanabasti is in Beejadoshasambandhi Vandhyatva (Alpapushpa, Nashtapushpa, Nashtabeeja). Yapanabasti perform both the actions of Niruha (Shodhan) and Anuvasan (Snehan) and hence it is very ideal in the treatment of infertility.
- By use of Basti Yoni becomes healthy, even sterile woman conceives. The Basti is
beneficial to woman having repeated abortion. Shaman Chikitsa. Kashyapacharya quotes the use of Rasona (Alliumcepa), Shatapushpa (Anethumgraveolens) and Shatavari (Asparagusracemosus) to be beneficial in all disorders of Artava. He advocates the utility of Shatapushpa Kalpa (a formulation of Shatapushpa) in the infertile woman to gain progeny. To correct hyperinsulinemia by using Pramehghna drugs like Give Yakritotejak drugs for the oestrogen clearance. Clear the Avarana by using Vatakapha Nashaka drugs for the proper follicular genesis and ovulation.

Discussions:

Ayurveda classifies PCOS is a kapha disorder. Vata is responsible for movement of follicle during ovarian cycle the rupture of the ovarian wall release the matured ovum to the movement of fimbriae the finger like projections that guide the ovum into fallopian tubes and movement of ovum towards the uterus.

PCOS is due to kapha blocking vata and pitta. Hence granthi adhara [cystic swelling], arbudha [glandular swelling] [tumour formation]. Apanavayudushthi or margavarodhjanya [obstructed channels and transformation process is suppressed]. Apanavayu in artavahasrota becomes sanga or stagnant due to excessive kapha and ama accumulation blocks the channel impeding the flow of vata in the ovarian cycle. As vata is blocked, pitta is also blocked as well, pitta in order to act as the intelligence behind transformation needs the movement of vata in order for its energy to have potential. The accumulated kapha is expressed in formation of cyst in the ovary. By above mentioned Ayurvedic treatment, hyperinsulinemia may bring down which is allow spontaneous ovulation and prevents long term complications of PCOS.

Conclusion:

The objective of the present study entitled, “Ayurvedic Management Of PCOS vis -avis Diabetes Mellitus. ’ Elementary books of Ayurveda and Modern were searched and analyzed for proper utilization in prevention and cure of PCOS .By summarizing the whole work following conclusion .On the basis of Ayurvedic as well as Modern fundamentals after analyzing the above facts, Hyperinsulinemia appears to play a key pathogenic role in PCOS women. By above mentioned Ayurvedic treatment, hyperinsulinemia may bring down which is allow spontaneous ovulation and prevents long term complications of PCOS.

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Cite article:
Ayurvedic Management of PCOS vis -a- vis of Diabetes Mellitus
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