



Case Study

**CONCURRENCE OF BRONCHIAL ASTHMA, PCOS IN YOUNG ADOLESCENT AND ITS MANAGEMENT
BY SIDDHA THERAPEUTICS - A CASE STUDY**

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ABSTRACT

Growing evidence suggests that polycystic ovarian syndrome (PCOS) and Bronchial asthma coexist thanks to their common pathogenicity route. Both PCOS and Bronchial asthma has been associated with chronic low grade inflammation which results in hormonal disparity. One such case of a young woman with a medical history of Bronchial asthma presented with complaints of irregular menstrual cycle with amenorrhoea and episodes of asthmatic attack once a month. The laboratory investigations including both blood and sonographic studies revealed the elevated absolute eosinophilic count, serum IgE and bilateral polycystic ovarian cyst. The Patient has been treated with internal medications and was advised to continue the physical activity such as walk for once a day and *Pranayama* (breathing exercise) as an adjunct to the treatment. After the treatment period of about 10 months, the outcome was assessed by both clinical prognosis as well as with USG report. The case study is about managing PCOS as well as bronchial asthma by Siddha therapeutic intervention and efficacy of the chosen drugs towards the ailments has also been explained with the help of preclinical studies conducted on the individual herbs of the formulation included in the study. This study could help to explore the therapeutic potential of Siddha medicine towards alleviating the low grade inflammation and hormonal imbalances associated with both Bronchial asthma as well as PCOS.

INTRODUCTION

The prevalence of PCOS among the reproductive age group of a female is increasing in this current scenario. The diagnostic criteria of PCOS can be made if any of the two following criteria is satisfied 1) Hyperandrogenism, 2) Ovulatory dysfunction, and 3) Polycystic changes in ovaries. [1] People with PCOS are exposed to metabolic syndrome earlier when compared to non-PCOS subjects. The common metabolic syndrome includes obesity, insulin resistance, and dyslipidemia. Another major concern is anovulatory infertility which is caused by PCOS. Chronic low grade inflammation plays an important role in the development of these metabolic syndromes in PCOS. [2]

The role of herbal medicine and other exercises like yoga plays a major role in gynecological disorders since there is a prevalence of fear about hormonal therapy among the population.

Asthma is a syndrome characterized by airflow obstruction in which chronic inflammation causes airway hyperresponsiveness to any allergen leading to symptoms of wheezing, tightness of the chest and cough. [3] The TH2 (T Helper 2 cell) response in asthma stimulates the release of cytokines not only causing local inflammation in the respiratory tract but also stimulates the systemic inflammation.

L. Zierau et al., in their review reported the studies conducted by Hart R, 2014 and Glinberg D, 2015 about the higher prevalence of asthma in women with PCOS. [4] There were also evidence that 30-40% of women reported flaring of asthmatic attack during premenstrual and perimenstrual periods. [5]

The link between PCOS and asthma is a complex pathway as they are associated with systemic inflammation. Tumour necrosis factor alpha (TNF alpha), a pro-inflammatory cytokine is elevated in patients with both PCOS and asthma. [6,7] This TNF alpha can cause insulin resistance (IR) by blocking the

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tyrosine kinase activity of insulin receptors.^[8] Insulin resistance contributes to over production of androgen from the ovary (Hyperandrogenism).

Case Presentation

A 15-year young female patient presented with complaints of irregular menstruation since 2020 and amenorrhea for one month. Asthmatic episodes have seen once a month for one year.

Medical History

The patient underwent ATT (Anti tubercular drug) for primary complex in childhood. She had a history of Bronchial asthma from childhood.

Family History

The patient’s father had a history of allergic rhinitis.

Past Interventions

The patient underwent treatment for Bronchial asthma in allopathy and the frequency has been reduced for two years.

Physical Examination and Clinical Findings

Timeline of Events

The treatment course of 10 months from the October 2021 to July 2022 is described in the Figure 1 in the chronological sequence.

The patient is overweighted for her age. Her BMI is 32.5kg/m²

The patient has no other specific clinical findings.

Naadi - Kabavatham.

Menstrual History

Attained menarche at age of 13. After menarche, menstrual cycle was regular for the first five months, then shifted to a delayed cycle approximately 40-45 days once and there was no menstruation from February 2021 to July 2021.

Last menstrual period – 1.8.2021.

Other Information Regarding Patient

The patient is school going, with no habits of taking junk food and other processed foods and was mixed diet. She also does a regular physical activity with some *Yogasanas* like *Pranayamam* and walk for half an hour.

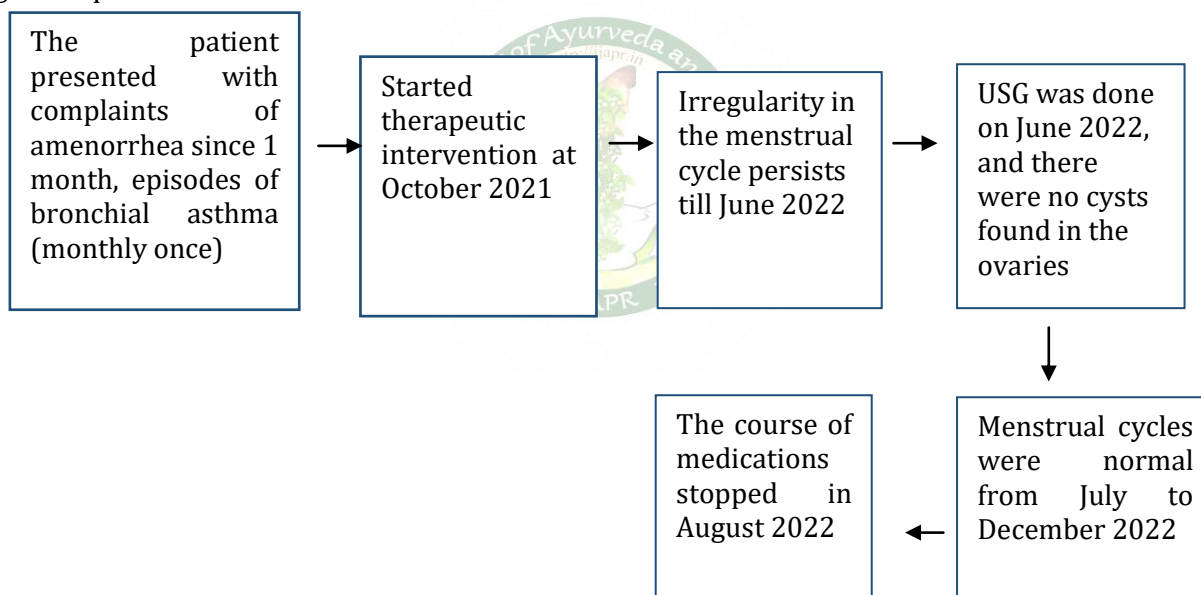


Figure 1: Timeline of Treatment Course

Diagnostic Assessment

The patient had been diagnosed with PCOS based on an ultrasonography report which shows a bilateral polycystic ovarian cyst.

The other blood investigation was done on 22.11.2021. Hb -12.3g/dl, T.WBC -9,300cells/cumm, DC - P-50%, L-43%, E-07%, and platelet count – 4.59 lakhs/ml.

The parents of the patient also documented orally that level of Serum IgE is above 2500 and it was persistent since 2020.

Therapeutic Interventions

The first visit of the patient is in October 2021. The course of medications from October 2021 to July 2022 is shown in Table 1.

Table 1: Course of medications from October 2021 - July 2022

October-December 2021	1) <i>Trikadugu choornam</i> (2g-0-2g) with honey 2) <i>Kasturi Karuppu</i> (100mg-0-100mg) with honey	To regulate the vitiated <i>Kaphavatha</i> humour
January-July 2022	1) <i>Trikadugu choornam</i> (2g-0-2g) with honey 2) <i>Annabethi chenduram</i> (200mg-0-200mg) with honey 3) <i>Asokapattai choornam</i> (2g-0-2g) with lukewarm water 4) <i>Aloe vera</i> juice (10ml-0-0)	To regularize the menstrual cycle

The patient was also advised to continue the breathing exercise once in the morning and walk for half an hour in the evening.

Follow-up and Outcomes

The patient was asked to visit once a month for consultation and to record for prognosis or any adverse effects of taking these drugs is shown in Table 2. After 10 months of treatment, the patient was advised to take USG and it shows normal ovaries on both sides with no polycystic appearance is shown in Table 3. The blood investigation was done on 4.11.2022 revealed the following: Hb - 12.1gm/dl, T.WBC - 8,300 cells/cumm, Platelet count- 3,62,000 lakhs/ml, DC - P-45%, L-48%, E-11%. Absolute eosinophilic count - 640 cells/cumm, Serum IgE - > 2500 IU/mm.

Table 2: Dates of menstrual cycle from October 2021 - December 2022

Month	Medications	Menstrual dates	Duration of the flow	Episodes of wheezing	Adverse effects on taking medications
October 2021 (first visit)	1. <i>Trikadugu choornam</i> (2g-0-2g) with honey 2. <i>Kasturi karrupu-</i> (100mg-0-100mg) with honey	No cycle attained	-	-	Nil
November	Same medicine continued	No cycle attained	-	-	Nil
December	Same medicine continued	11.12.2021	5 days	-	Nil
January 2022	1. <i>Trikadugu choornam</i> (2g-0-2g) with honey 2. <i>Annabethi chenduram</i> (200mg-0-200mg) with honey 3. <i>Asokapattai choornam</i> (2g-0-2g) with lukewarm water 4. <i>Aloe vera</i> juice (10ml-0-0)	No cycle attained	-	-	Nil
February	Same medicine continued	No cycle attained	-	-	Nil
March	Same medicine continued	10.3.2022	5 days	-	Nil
April	Same medicine continued	No cycle attained	-	-	Nil
May	Same medicine continued	31.5.2022	3 days	30.5.2022	Nil
June	Same medicine continued	No cycle attained	5 days	-	Nil
July	Same medicine continued	20.7.2022	5 days	-	Nil
August	Stopped medications	23.8.2022	6 days	-	Nil
September	Not on medications	20.9.2022	2 days	-	Nil
October	Not on medications	17.10.2022	3 days	21.10.2022	Nil
November	Not on medications	18.11.2022	6 days	18.11.2022	Nil
December	Not on medications	20.12.2022	5 days	-	Nil

Table 3: USG Observations Before and After Treatment

Before Treatment (10/7/2021)	After treatment (14/06/2022)
<ul style="list-style-type: none"> • Right ovary: Size measures 3.7×1.8cm • Left ovary: Size measures 3.9×1.6cm • Both ovaries: Appears enlarged with prominent stroma and multiple peripheral follicles measuring 5.0-7.0 mm in diameter giving a necklace pattern. • Impression: Mildly enlarged both ovaries with multiple tiny peripheral cyst reflecting bilateral polycystic ovaries. 	<ul style="list-style-type: none"> • Right ovary : Size 1.7×2.2×3cm Volume – 6 cc • Left ovary: Size 3.6×2×2.8cm Volume- 10.6 cc and shows a follicle of size 1.4×1.1cm. • Both ovaries: Normal in size. • Impression: No significant abnormality seen in abdomen and pelvis.

DISCUSSION

On looking into the pathogenesis of PCOS, the cyst appearance in ovaries and irregular menstrual cycle such as oligomenorrhea and amenorrhea reflects the vitiated *Kaphavatha dosha*. The drug regimen was selected on the basis to alleviate both PCOS and asthma and to regulate the *Kaphavatha dosha*. Also, the individual herbs or herbometallic preparations of the chosen drugs were scientifically evaluated for their positive influence on hormonal levels in PCOS-induced rats.

In Siddha Materia Medica, the *Trikadugu choornam* which contains three herbal ingredients, *Zingiber officinale*, *Piper nigrum*, and *Piper longum* were well known for alleviating *Kapha dosha*. The individual herbs in *Trikadugu choornam* were tested for its efficacy on PCOS in preclinical settings. Atashpour et al., conducted a study on PCOS-induced female wistar rats with the extract of ginger rhizome and found a significant increase in FSH (Follicle Stimulating Hormone), progesterone and a decrease in LH (Luteinizing Hormone) and estrogen.^[9] Pokale et al., conducted a study on PCOS induced female wistar rats with hydroalcoholic extract of *piper longum* which effectively reduced the cystic follicle count, testosterone level, LH and enhances FSH level.^[10] *Piper longum* fruit extract also exhibits anti asthmatic activity on antigen induced bronchospasm in rats and guinea pigs.^[11]

Similarly, *Kasturi karuppu* which contains *Muscione* as its chief ingredients were indicated for both respiratory ailment and gynecological disorders specifically to increase the flow of post-partum lochia.^[12] It also exhibits anti-inflammatory activity and anti-fibrotic activity^[13]. The *Annabethi chenduram* is for inducing menstruation and it is indicated in the traditional literature of *Siddha Gunapadam*.^[12]

Shahid et al. revealed that methanolic extract of *Saraca asoca* bark exhibits anti-inflammatory and anti-estradiol activity on estradiol induced keratinizing metaplasia in rat uterus.^[14]

Maharjan et al., studied the effect of Aloe Vera gel formulation on Letrozole-induced PCOS rat model and found it was effective in the management of PCOS

by decreasing the enzymes like 3 beta-Hydroxy steroid dehydrogenase (3 beta- HSD) which regulate the formation of estradiol.^[15]

In summary, the patient in this case study had a regular menstrual cycle for the last six months even without medications and there is a disappearance of polycysts in both ovaries. Another important observation in this case study, the episodes of three asthmatic attacks were seen especially during a premenstrual and perimenstrual periods which further affirms the association between PCOS and asthma.

Similarly, even though the frequency of asthma has been reduced, yet there is no change in Serum IgE and absolute eosinophilic count. However, the study is limited since it is a single case and needs more clinical trials to declare its efficacy.

CONCLUSION

This case study affirms the existing hypothesis of the association between Bronchial asthma and PCOS. The management of both these complaints in this single case study by Siddha medications could lay a foundation for future research and clinical trials to explore the efficacy of these drugs in the above ailments.

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