

ROLE OF KAPALBHATI KRIYA IN MANAGEMENT OF PCOS.*¹Dr. Prajakta Dhananjay Joshi and ²Dr. Ramesh Ujwale¹Final Year PG student, (Dept. of Swasthviritta and Yoga), MAM's Sumatibhai Shah Ayurved Mahavidyalaya, Hadapsar, Pune.²Professor and HOD, (Dept. of Swasthviritta and Yoga), MAM's Sumatibhai Shah Ayurved Mahavidyalaya, Hadapsar, Pune.

*Corresponding Author: Dr. Prajakta Dhananjay Joshi

Final Year PG student, (Dept. of Swasthviritta and Yoga), MAM's Sumatibhai Shah Ayurved Mahavidyalaya, Hadapsar, Pune.

Article Received on 20/06/2019

Article Revised on 11/07/2019

Article Accepted on 01/08/2019

ABSTRACT

Polycystic Ovarian Syndrome (PCOS) is common endocrine system disorder among women of reproductive age, generally present with co-morbidities like insulin resistance (hyper insulinimia), obesity, anovulation, menstrual irregularity, infertility and Hirsutism. It is a major lifestyle disorder and PCOS shares similar pathology with Metabolic Syndrome. Many researchers have proved that *Kapalbhati* is effective in management of Obesity and other metabolic syndromes. The review analyses how *Kapalbhati Kriya* plays a vital role in management of PCOS by significantly curing comorbidities associated with it, hence it is hypothesized that *Kapalbhati* holds good against PCOS too. The paper elucidates mode of action of integrated approach of *Kapalbhati Kriya* on management of PCOS.

KEYWORDS: PCOS, Metabolic syndrome, *Kapalbhati Kriya*.**INTRODUCTION**

In the current era our metaphysical society is facing stress, unsteady lifestyle, ill lifestyle habits and poor eating practices. Lifestyle diseases also referred to as diseases of longevity of civilization, are ones that reported to increase in frequency as countries have become more industrialized, because of which newer lifestyle disorders are emerging. PCOs is metabolic malady mother of all lifestyle disorders which is a major public health challenge, it is most common endocrinopathy affecting women of childbearing age and teenage girls. World health organization estimates that it affects 116 million women worldwide as of 2012 (3.4% of women) in India,^[1] one out of three women is suffering from PCOS. These kind of Life style disorders are not epidemic but proved to be a silent killer.

AIMS AND OBJECTIVES

- To study mode of action of *Kapalbhati Kriya* on PCOS.
- The merits it provides to the preventive and curative aspects.

MATERIALS AND METHODS

This is a conceptual study based on references gathered from the classic texts, research journals and acclaimed *Yoga* books.

Overview of PCOS

PCOS (Polycystic Ovarian Syndrome) was first described in 1935 by American gynecologists Irving F. Stein, Sr. and Michael L. Leventhal, from whom the name *Stein-Leventhal syndrome* was taken. A polycystic ovary has an abnormally large number of developing eggs visible near its surface looking like many small cysts or strings of pearl. It is also a common metabolic disorder with reproductive and metabolic consequences, characterized by anovulation, menstrual irregularities, infertility and hirsutism.

An increasing number of patients with various forms of menstrual irregularities are seen these days. Amongst these *Artavkshaya* (oligomenorrhea) consequent to PCOS comprises the major part. Any defect in Hypothalamus-Pituitary-Ovarian axis causes hormonal or chemical imbalance which may alter the ovarian function leading to PCOS.

Ayurvedic view

PCOS is an Anukta Vyadhi i.e. not described in Ayurvedic Samhitas separately but portrayed under the headings of various Yonivyapad (genital pathologies), and Artavdushti (menstrual pathology) can be correlated to Pushpaghni Jataharini,^[2] Artavkshya,^[3] (hypo menorrhea), Nashtartava,^[4] Arajaska,^[5] Ksheenaartava,^[6] (oligomenorrhea) and Grathibhuta Artava,^[7] (clotted menses).

Acharya Charak says vitiated *Dosha* due to different etiology produces different kind of diseases, so *Prakruti* (nature), *Sthana* (Site), *Nidan* (Etiology) of disease should be considered when treatment is done. The clinical symptoms can be correlated with symptoms of *Yonivypad* and *Artavdushti*.

Hetu (Etiology)

In the context of *Yonivypad*, basic four *Hetus* are seen unwholesome lifestyle, menstrual disarrays (*Dusti* of *Antahpushpa* i.e. Ova and *Dushti* of *Bahipushpa* i.e. menstrual blood), genetic disorders (*Bija Dosha*), and divine factors.^[8]

Rupa

According to *Ayurvedic Samhita*, In *Artavakshaya* menstruation does not occur at appropriate time, or may be its less in quantity or may be with some pain and discomfort.

Samprapti

The *Ahar Ras* produced after digestion of food then it undergoes *Sara-kitta Vibhajan* and produces further *Dhatu*. In PCOS, under nourished *Ras Dhatu* is produced. Due to under nourished *Ras Dhatu* further *Rakta*, *Mamsa*, *Meda*, *Asthi*, *Majja*, *Shukra Dhatu* does not get nourishment properly and *Lakshanas* of *Mamsa Dushti* and *Meda Dushti* like *Akshaglani* (Debility of the sense organs), *Sandhishoola* (Pain in joints) etc. are seen. *Artava/ Raja* is *Updhatu* of *Ras Dhatu*. *Artava* can be co-related with *Ovum* and *Raj* can be co-related to menstrual blood. So, any disturbance in *Rasadhatvagni* will lead to disorder of *Raja* and *Artava* in particular.

Ras Dhatu when gets affected produces *Kapha Mala* and give rise to poorly nourished further *Dhatu*. *Hrillas* (Vomiting), *Gaurav* (heaviness in body), *Tandra* (sleepiness), *Angamarda* (Pain in body), *Tama* (Blackout), *Panduta* (Anaemia), *Klaibya*, *Srotorodh* (Blockage of body channels) are the *Lakshanas* seen in *Ras Dhatu Dushti* all these *Lakshanas* are similar in PCOS. *Pitta* is *Mala* of *Rakta Dhatu* while *Shonita* (Menstrual blood) is *Updhatu* of *Rakta Dhatu* hence it can be summarized as *Vitiated Vata* along with *Vitiated Mamsa*, *Rakta* and *Meda Dhatu* and *Dushit Kapha* leads to formation of *Granthi* i.e. Cysts in PCOS.

From above all we can say that PCOS is a *Raspradoshaj* and *Santarpanotha Vyadhi*.

PCOS: Modern View.

In PCOS, excess production of androgens interferes with the process of follicular maturation and selection of dominant follicular maturation and selection of dominant follicles during Ova formation. It also promotes early stages of follicular growth in primate ovary leading to the syndromes insulin resistance and fat distribution. The level of Luteinizing hormone is elevated and the ratio LH: FSH is greater 3:1.^[9]

Clinical features

1. Patient complains of increasing abdominal obesity.
2. Menstrual abnormalities in the form of oligo menorrhea, amenorrhea or DUB and infertility.
3. Hirsutism and Acne.
4. Virilism.

Pathophysiology

Exact patho-physiology of PCOS is not clearly understood, it may be discussed as:^[10]

- a) **Hypothalamic-Pituitary compartment abnormality:** Increased pulse frequency of GnRh leads to increased pulse frequency of LH. The LH: FSH ratio is increased.
- b) **Androgen:** Abnormal regulation of the androgen forming enzyme is thought to be the main cause for excess production of androgens from the ovaries and adrenals.
- c) **Anovulation:** because of low FSH level, follicular growth is arrested at different phases of maturation.
- d) **Obesity and insulin resistance:** Obesity (central) is recognized as an important contributory factor. Apart from excess production of androgens, obesity is also associated with reduced SHBG (sex hormone binding globulin). It also induces insulin resistance and hyper insulinemia which in turn increases the gonadal androgen production.
- e) **Long-term consequences:** Endometrial hyperplasia, risk of developing diabetes mellitus, risk of developing endometrial carcinoma, risk of hypertension and cardiovascular disease.

Comorbidities of PCOS

Women with PCOS are prone to health consequences such as type-II diabetes mellitus, HTN, dyslipidemia, atherosclerosis, infertility, obesity and other metabolic syndromes. Researchers have shown that metabolic syndrome is highly prevalent in women with PCOS and pathology of both contains insulin resistance.

As described earlier co-morbidities of PCOS contains Obesity and it is a gateway to an arena of metabolic disorders as it affects the functions of many vital systems of the body. *Acharya Sushruta*,^[11] has described an etio-pathogenesis of *Sthaulya* as; *Sthoulya* and *Karshya* both are dependent on *Ras Dhatu*.

PCOS and Obesity both are *Raspradoshaj* and *Santarpanotha Vyadhi* formed due to poor lifestyle and food habits which causes *Agnimandya*, *Amotpatti* and *Srotorodh*. Similar pathology occurs in other Metabolic syndromes.

Stress which is proliferating factor in the current world is said to be one of the causative factors of PCOS. Stress increases activity of sympathetic nervous system which produces changes in physiological response such as heart rate, breath rate and blood pressure which further hampers the homeostasis of body, also induces allostatic load i.e. "the wear and tear of the body" which

accumulates as an individual is exposed to repeated or chronic stress. In such patients. This load manifests as changes in sympathetic-parasympathetic responses, hormonal changes due to changes in hypothalamic-pituitary-adrenal axis and endothelial dysfunction. A greater allostatic load may also hinder fast recovery from psychological stress.^[12]

Kapalbhati

Kapalbhati is basically a type of *Shatakriya* which is technique of body cleansing. It is derived from two words “*kapal*” meaning skull and organ inside it and “*Bhati*” meaning illuminating, *Kapalbhati* may help in correcting functions of these organs, purify blood and tone of abdominal muscles. It is advisable to keep stomach, bladder and bowels empty while performing *Kapalbhati*. *Kapalbhati* should be discontinued if practitioner experience any discomfort for e.g. dizziness, syncopal attacks.

Breathing is a vital process which is unbroken from birth to death. During this lifetime organs of body receives oxygen through breathing, “*Prana*” represents “vital energy” while “*Ayama*” means “control” hence, control of the life force. So one can control the rhythms of *Pranic* energy with *Pranayam* and attain healthy body and mind.

Kapalbhati is a technique which involves rhythmic rapid breathing hence it can also have termed as *Pranayam*. There are two types of breathing techniques involved in *Pranayam*, Slow and Rapid, *Kapalbhati* is one of the rapid breathing techniques, also known as an automatic inhalation technique. It is a form of abdomino-respiratory-autonomic exercise.

In today's day to day life *Kapalbhati Kriya* is associated with *Pranayam* due to its breathing patterns. *Pranayam* is one of the pillars of *Ashtang Yoga*, it increases life span by practicing prolonging and shortening breath cycle. *Pranayam* can also help in prevention and cure of disease such as obesity, hypertension and diabetes, which involves disruption of homeostatic state of autonomic nervous system.

Applied Physiology and Mode of Action of *kapalbhati*

Physiologically exhalation is a passive process by which there is automatic coiling of diaphragm forcibly exhaling air out of the lungs. The external and internal oblique, rectus and transversus abdominis are the muscles of abdomen which are generally used in quiet breathing, are most powerful muscles forced exhalation. Due to contraction of these muscles abdominal pressure is generated on organs of abdomen which eventually pushes the diaphragm up which results in forceful exhalation. Abdominal breathing produces slow but large tidal volumes. Due to increased activity of parasympathetic nervous system over sympathetic nervous system yields emotional stability and controlled responses to the stressful environment.

Kapalbhati contributes to stimulation of respiratory, abdominal and gastrointestinal receptors. Also, afferents, centers in brain-stem and cortex also, efferents and effectors get stimulated. This leads to synchronous stimulation of autonomic nervous system, hypothalamus, pineal gland and other associated brain structures. Because of this there is synchronous increase in autonomic nervous system, pineal gland, hypothalamus and other central nervous system discharge to all parts of the body including endocrine and metabolic processes.

Benefits

1. It is known to maintain acid-base balance.
2. Deep inhalation makes the dead space of the lung active, thus improving oxygenation to tissues and cleanses the body as whole.
3. In *kapalbhati* the breathing is with high force which provides great impact on abdomen and its contents also it increases the circulation of blood and corrects glandular secretions which helps in management of disease.
4. It maintains balance and harmony of *Vata*, *Pitta* and *Kapha*.
5. Maintains psychological balance.
6. Also helps in awakening of “*Kundalini*” power.

DISCUSSION

***Kapalbhati* combating PCOS**

1. *Kapalbhati* is considered as a form of abdomino-respiratory- autonomic exercise which stimulates the respiratory, abdominal and gastro-intestinal receptors.
2. It induces positive influence on centers within the skull, the vital areas of the brainstem, cortex, their efferent pathways and effector organs may get stimulated, that results in synchronous discharge from autonomic nervous system, pineal gland and hypothalamus which regulates the endocrine and metabolic processes increases which in turn, increases fat metabolism.
3. Due to above it increases basal metabolic rate, reduces fat deposition, and ultimately helps in fat reduction.^[13]
4. It tones abdominal muscles and reduces abdominal fat, also increases hepatic and lipoprotein lipase which induces increase uptake of triglycerides.^[14]
5. *Kapalbhati* is known to regulate the brain-pancreas-endocrine axis and hence corrects the features of MS such as, hyperglycemia and dyslipidemia.^[15]
6. Insulin resistance, the common factor in PCOS and MS is combated by improving blood supply to muscles and enhanced insulin receptor expression on the muscles. Hence, hyper insulinism and Impaired glucose tolerance is treated by long term practice of *Kapalbhati*.^[16]
7. *Kapalbhati* improve autonomic function by balancing the sympathetic and parasympathetic activity which is beneficial to stress related disorders.^[17]

CONCLUSION

It can be ascertained that with the available literature and studies, kapalbhati effectively targets and combat the features of MS since PCOS and MS share a common pathology pathway it is worthwhile to consider that kapalbhati plays significant role in management of PCOS.

REFERENCES

1. A.M. Kabel Polycystic ovarian syndrome: insights into pathogenesis, diagnosis, prognosis, pharmacological and non-pharmacological treatment. *Pharmacol. Rep.*, 2016; 1(103): E₁ to E₅.
2. Sharma P H, Kashyap Samhita, Kalpasthan, Revatikalpadhyaya Shlok no. 33, Chaukhamba Sanskrit Sansthan, Varanasi, edition, 2012; 192.
3. Dalhana, Sushruta Samhita, Nibandha Sangraha and Nyaya Chandrika commentary, editor Jadhavji T. Sutrasthan 15/12, Chaukhamba Sanskrit Sansthan, Varanasi, edition, 2014; 70.
4. Gupta KA, Ashtanga Sangraha, Sharirsthan, 1/13, Chaukhamba Krishnadas Academy, Varanasi, edition, 2011; 263.
5. Shastri P.K. and Chaturvedi G.K. Charaka Samhita with vidyotini hindi commentary, Chikitsa sthan 30/17, Chaukhamba Sanskrit Sansthana, Varanasi, reprint edition, 2012; 842.
6. Dalhana, Sushruta Samhita, Nibanhasangraha an Nyaya Chandrika commntary, itor, Jadhavji Trikamji, Sharirsthan 2/4, Chaukhamba Sanskrit sansthan Varanasi, - 20edition, 14; 344.
7. Ibid. Sushruta Samhita, Sharira Sthan, 2/4, 344.
8. Shastri P.K. and Chaturvedi G.K. Charaka Samhita with vidyotini hindi commentary, Chikitsa sthan 30/08, Chaukhamba Sanskrit Sansthana, Varanasi, reprint edition, 2012; 841.
9. Vidya Narayan, "Ayurvedic Management Of Polycystic Ovarian Disease With Chandraprabha Vati", Dept. of P.G. Studies in Prasooti Tantra Avam Streeroga, S.D.M. College of Ayurveda and Hospital, 2010.
10. Tripti L. Analysis of PCOS in Ayurveda to cure it without any side-effects, Assistant professor dept. of Panchakarma, Gaur Brahman Ayurvedic college and hospital, Rohtak, Haryana, India, Volume 1/ Issue 3/ December, 2015; 1-5; 2.
11. Sushruta, Sushruta Samhita (Nibandha Sangraha Commentary). Yadavji Trikamji, Editor Varanasi, Chaukhamba Prakashan Sanskrit Sansthan, Sutrasthan, 2010; 15/32; 73.
12. Tyagi A, Cohen M, Reece J, Telles S. An explorative study of metabolic responses to mental stress and Yoga practices in Yoga practitioner, Non-yoga practitioner and individuals with metabolic syndrome. *BMC complement Altern Med*, 2014.
13. Dhara R.D. Yogesh A.J. A study on impact of Yoga on self-control in obese women, IJSRP, 2012.
14. Neetu M. The role of physical exercise and diet modification on lipid profile and lipid peroxidation in long term glycemc control type 2 diabetes. *Gen Med*, 2014.
15. Manoj Kumar P, Bhatnagar R.K. Metabolic errors and their improvement with Yoga. *Indian J Pathol Rers pract.* Ibid, ref, 2014; 12.
16. Ganesh BR, Madhushree PD, Andrea RH. Comparative study on effect of slow and fast phased Pranayam on quality of life and pain in physiotherapy girls with primary dysmenorrhea: Randomized clinical trial, 2015.