Lifestyle Modifications as the first line therapy in Polycystic Ovary Syndrome

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Introduction

Motherhood is the dream of every woman. And when it comes to infertility we lack words to mourn an absence. There are words and phrases to express a loss but we become wordless when it comes to capture that particular emptiness. Who can describe the feeling of a tiny hand that had never been held. Her desert will blossom like eden. Her barren wilderness like the garden of the lord. PCOD is a well-known entity and a common cause for infertility. Also known as Stein-Leventhal syndrome. Although considered to be a bane of modern living it is an ancient disease known right from the times of Hippocrates and Soranus of Ephesus. They noted women with mearge menstruation are robust, with a healthy complexion and a masculine appearance; yet they are not concerned about bearing children nor do they become pregnant. There are women whose skin is dry and hard, and whose nature resembles the nature of a man. This describes the wide array of manifestations of disease.

Finally it was in 2003 when ESHRE & ASRM came together in international consensus workshop to expand the diagnostic guidelines for the PCOS to the so called Rotterdam criterion. The diagnosis is based on presentation of any of the 3 criterion- clinical or lab suspicion of hyperandrogenism and ultrasound diagnosis of Polycystic ovaries. Polycystic ovaries on ultrasound are described as ones whose volume is more than 10 ml or the ones with follicles 12 or more in number each measuring 2-9mm in diameter. 25% have PCO but only 5% have PCOS.

Pathophysiology

To describe the pathophysiology it is interplay of obesity, excessive androgens and hyperinsulinemia with an established role of intrauterine environment and genetic factors leading to disturbance of Hypothalamic-Pituitary-Ovarian axis. Insulin Resistance & compensatory hyperinsulinemia are the key aetiological factors. This Insulin Resistance has a wide array of manifestations. Both obese and non-obese have a component of Insulin Resistance, but obesity makes your Insulin Resistance worse which together with leutinizing hormone acts upon the ovaries to increase the androgen secretion together with decreased production of Sex Hormone Binding Globulin from liver, thus excessive androgens in the body.

Effects

Affects 4-8% of general population & may be associated with 75% of women with oligomenorrhea to as high as 90% of those with hirsuitism. It’s a lifelong condition, starts from beginning and continues till latter years. It bothers you not just for reproductive problems like infertility, miscarriage and pronounced adrenarche but is also a source of concern in the antenatal period causing hypertension, diabetes mellitus and ?Intrauterine growth restriction. Just this is not enough and it will haunt you with its metabolic sequelae such as DM, HTN, hypercholesterolemia, CAD and genital tumours due to unopposed oestrogen [1,2].

Life Style Modifications

Let us put in a step forward to make small changes that would make big differences in our life. Let’s begin with Life Style Modifications.

Diet constituting 55% carbohydrates, 15% protein and 30% fat with less than 10% coming from saturated fats is an ideal diet as suggested by nutritionists. Diet with low fat and high carbohydrate content will make your insulin rise. And this raised insulin will alter the steroioidogenic metabolism and thus the raised androgens. Secondly, it disrupts the lipoprotein metabolism leading to hypercholesterolemia & altered lipid metabolism resulting in abdominal obesity which in turn will cause Insulin Resistance thus forming a viscous cycle.

Dietary Modifications

Hence, the need of the hour is the dietary modification. Actively involve the dietician to curb on your carbohydrates and increase the fibre content (25-30 gram a day). Fibres get digested slowly and hence a slow rise of blood sugars. Include lots of whole foods in the diet and cut down on junk, processed foods, soda, fruit juices, candy, cookies, and ice-creams. Limit sugars and enriched carbohydrates. Low salt intake; rather use lemon juice, mustard, vinegar, pepper, herbs, and spices instead of salt to season foods. Choose unsaturated fats like low fat dairy products, white meat and fish [3]. Use olive, corn and canola oil for cooking. Include almonds, walnuts, and flaxseeds in your routine [4]. Include cholesterol to less than 300 mg/d. Follow healthy cooking practices like baking, boiling, broiling, grilling instead of frying.

How many calories need to be cut down for attaining adequate weight loss is still not known but an attempted target is 500 kcal/d to achieve a goal of 3500 kcal/wk. A loss of even 5-10% will affect Insulin Resistance and improve the reproductive outcomes. Scientists like Hollman, Huber and Hoger have reported variable improvements in ovulation rates, maximum achieved was 80%.

Exercise

One side of the balance has been looked upon; the other side still remains i.e., to increase your calorie burn out. The answer is exercise. Be physically more and more active. Involve yourself in 30 mints of exercise daily or at least 5 days a week so that its 150 mints workout every week [5]. This will help you lose weight or at least maintain
weight. Small changes in our daily routine like using stairs instead of elevators, getting off 2 stops earlier than our destination or parking the car at the end of the lot and walking that distance would also help us with no extra efforts. Exercise can be in any form- Zumba, Pilates, Yoga, Aerobics, Cycling, Walking or Swimming.

What do we expect: One, this will improve insulin sensitivity thus lowering the Insulin Resistance. Two, it increases the frequency of ovulation, hence the pregnancy rates. Decrease the cholesterol and its metabolic consequences and a healthy body composition, third. Although now proved beyond doubt that lifestyle interventions form the first line therapy for the treatment of PCOS, but to quote this is a meta-analysis of 608 participants from human reproduction which compared lifestyle modifications versus metformin plus lifestyle modifications [6]. It observed similar improvement in menstrual cyclicity and spontaneous pregnancy rates. Lipid, glucose and insulin levels remain unaltered with either. Androgen levels decreased with metformin group only, also weight loss was greater in this group. Lifestyle modifications without rapid weight loss lead to reduction of central fat and insulin sensitivity which restores ovulation in overweight infertile women with PCOS [7]. The fasting insulin, insulin sensitivity index and luteinizing hormone improved in responders with a significant p-value.

Also the Cochrane database 2011 compared 6 studies in terms of primary and secondary outcomes [8]. Meta-analysis for primary outcomes (fertility and menstrual regularity) was not done due to lack of appropriate data, but secondary outcomes like reduced total testosterone, fasting glucose was noted. Improvement in anthropometric markers (weight and adiposity distribution) was also seen. Weight loss of 5-10% was considered clinically significant and this managed to show improvement in risk factors for coronary vascular diseases and diabetes mellitus.

**Conclusion**

Try to follow a healthy eating pattern. Be more active. Avoid smoking and control your weight.

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