

PREVALENCE OF PCOS AND HYPOTHYROIDISM IN OBESE WOMEN VISITING THE HEALTH AND WELLNESS CENTRE IN CENTRAL INDIA

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Abstracts: Back ground: Obesity is one of the leading preventable causes of death worldwide and it is fastest growing problem of world now a days. Every third person of world is suffering from obesity. It is more common in female compare to male. As there are various cause of this like life style changes, dietary modification and medical illness. Among various medical condition PCOS and Hypothyroidism is most common cause of obesity in female. **Materials and Methods:** we measured percentage of PCOS and Hypothyroid subject in post pubertal female coming for weight reduction in a wellness centre. We diagnosed PCOS and Hypothyroidism by clinically and laboratory investigation. **Result:** there are high numbers of cases of PCOS & Hypothyroidism in Obese women. **Conclusion:** PCOS and Hypothyroidism is one of common causes of obesity in female or obesity may cause this condition.

Key Words: PCOS, TSH, BMI, LH, FSH, T3 & T4

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Introduction:

Obesity is one of the emerging problems of the world [1][2]. According to WHO Overall, about 13% of the world's adult population (11% of men and 15% of women) was obese in 2014. In 2014, 39% of adults aged 18 years and above 38% of men and 40% of women) were overweight[3]. COS and hypothyroid is leading medical condition which causes obesity in female.

Thyroid disorders and polycystic ovary syndrome (PCOS) are two of the most common endocrine disorders in the general population. Abnormalities of the thyroid are among the most common diseases of the endocrine gland.

The thyroid gland synthesizes and stores thyroid hormone (TH), it is important as the body's metabolic hormone. That increases our basal metabolic rate (BMR) and body heat production. The hormone also helps maintain cardiac activity and blood pressure , regulates cell growth and development of nervous system .

When there is decrease release of TH the body's metabolic rate decreases causes nervousness or tiredness fatigue, cause weight gain, slow heart rate ,constipation ,poor memory and affect menstrual cycle can cause miscarriage and infertility. It may also cause low body temperature ,make dry or itchy skin, thin dry hair or hair loss [4].

It is estimated that one in eight women develop a thyroid disorder at some time in her life. Women are at particularly high risk for developing thyroid disorders following childbirth.[5]

Similarly Polycystic ovarian syndrome (PCOS) is the most common reproductive disorder, affecting up to 5- 10 percent of all women. [6]

It is describe by Irving F. Stein and Michael L. Leventhal in 1935 as a symptom due to anovulation.[7]

Oligomenorrhea, hirsutism and obesity together with enlarged polycystic ovary (PCO) were the diagnostic criteria of PCOS

2 of the 3 following criteria are required for a diagnosis of PCOS (as defined by the Rotterdam Criteria: [8]

1) Anovulation or Irregular Periods
2) Hyper-androgenism/elevated male hormone levels

OR

Clinical hyper-androgenism that result in acne, hirsutism means male pattern distribution of body or facial hair or hair loss (androgenic alopecia)

3) Polycystic appearing ovaries on ultrasound, containing multiple small follicles

Women with PCOS are at risk for infertility and early pregnancy loss. Most of women are overweight, with difficulty in losing weight, and suffer from

fatigue, depression and anxiety. Another common problem between obesity and PCOS is insulin resistance.[9].

Thyroid disorders are more common in women with PCOS as compared to the normal population.[10][11][12][13]

There's a significant overlap of symptoms like obesity, irregular menstrual cycle etc. between PCOS and Thyroid Disease, despite the fact that they are two very different conditions.

On average, women with PCOS have higher TSH levels and are also more likely to have subclinical hypothyroidism when compared to age-matched controls without PCOS. [14]

A deficiency in thyroid hormones will make androgenic symptoms such as hair loss, acne, and hirsutism similar to PCOS

So it is important that all women with PCOS should have their thyroids evaluated thoroughly (TSH, FT3, FT4, Anti TPO, Anti TG).

Subclinical hypothyroidism also caused insulin resistance in women in all weight categories.

Several study[15][16][17] found that women with PCOS had increased prevalence of autoimmune thyroiditis, in 65% increase in thyroid peroxidase antibodies.

Material and Methods:

This was a non-comparative cross-sectional study carried out over the period of 12 months. A total of 498 diagnosed post-pubertal obese client studied which are visited to health and wellness centre (VLCC) to reduce their weight. Informed and written consent of all the subjects was taken before conducting the study. The Ethical clearance was obtained from the institution SAMC & PGI Indore.

Obesity is measured by BCA analysis in which we had taken BMI (weight in Kg / height² in meter) as criteria to defined obesity [3]

INCLUSION CRITERIA:

1. Female between 18 to 45 years of age.
2. BMI more than 23.0 kg/m²
3. Presented with clinical history of PCOS and Hypothyroidism as described by us.

EXCLUSION CRITERIA:

1. Female below 18 years and above 30 years.
2. Subjects with other gynecological problem.
3. Female with recent delivery.

Criteria for obesity based on body mass index (BMI) for Indian population considered as

Normal BMI: 18.0-22.9 kg/m²,

Overweight: 23.0-24.9 kg/m²

Obesity: >25 kg/m² BMI ≥ 25 was considered as obese. [18]

Raised BMI is a major risk factor for various noncommunicable diseases such as:[3]

- cardiovascular diseases (mainly heart disease and stroke), which were the leading cause of death in 2012
- diabetes
- musculoskeletal disorders (especially osteoarthritis - a highly disabling degenerative disease of the joints)
- some cancers (endometrial, breast, and colon)

Patients presented with of irregular menses and /or infertility and difficulty in reducing weight or sudden change in weight taken as per inclusion and exclusion criteria. Detailed menstrual history, marital status, and parity were recorded. Written informed consent is taken from every subject.

Presence of at least two criteria from clinical, hormonal and abdominal USG category was considered as diagnostic of PCOS. As they already come with USG report. Women who presented with complain of irregular menses or oligomenorrhea (delay of menses for 35-182 days) or amenorrhea , signs or symptoms of Hyperandrogen like hirsutism (extra hair growth over body specially on face), abdominal USG showing ovarian cyst were included in the study. After confirmation of presence of any symptom we send for laboratory examination. (serum hormonal essay FSH , LH , Testosterone & Prolactin level) For diagnosis of hypothyroidism detailed clinical history like presence of swelling, fatigue, tiredness, irregular periods, resistance to reduced weight, cold intolerance , clinical examination and laboratory investigations like Blood glucose[19] fasting and 2 h post 75 g glucose), serum thyroid stimulating hormone (TSH), thyroxine levels (free T3 and free T4 done by radioimmunoassay in obese client.

Table: Percentage wise distribution of PCOD and hypothyroid cases

Month	No. of obese Women	No. of PCOD cases	No. of Hypothyroid cases	% of PCOD cases	% of Hypothyroid cases
April	54	09	12	16.7	22.2
May	52	09	12	17.3	23
June	28	10	07	35.7	25
July	51	08	06	15.7	11.7
August	50	08	06	16	12
September	50	10	14	20	28
October	44	07	14	15.9	31.8
November	30	06	08	20	26.7
December	43	05	08	11.6	18.6
January	27	05	05	18.5	18.5
February	28	08	07	28.6	25
March	41	10	07	24.4	17.1
Total	498	95	106	19.1	21.3

Discussion:

In our study subject having disturbance in menstrual cycle in form of oligomenorrhoea or amenorrhoea was 90%. This is also reflected in other studies which report 60-85% patient suffering from gross menstrual dysfunction. [20] [21]

19 % of obese women which are willing to reduce weight had diagnosis of PCOD and 21% have hypothyroid out of 498 women.

In our study, thyroid dysfunction was present in 21 % of the subject. Our result is in accordance with that of Ozdemir, *et al.* The authors have studied prevalence of thyroid pathologies in patients with PCOS and reported that in 107 PCOS women, 15.9% had hypothyroidism. [22] Women with thyroid dysfunction are another subgroup of PCOS.

Analysis of thyroid hormones is may become a part of investigations along with the PCOS, as it is not followed as a rule and we didn't correlate it. There were the patient which are presented with both the condition PCOS and Hypothyroidism.[23]

In our study, patients with clinical feature of thyroid dysfunction were evaluated by thyroid function test. Further studies are needed to reveal the association of thyroid dysfunction and PCOS. PCOS can present with multiple clinical features like cyst on USG, oligomenorrhea, obesity, anovulation, hirsutism. These findings may be present alone or in various combinations with one another. but now a days most of the cases presented with only history of oligomenorrhea /amenorrhea along with obesity and they are resistant to reduce the weight.

Most obese patients also presented with of AN and hirsutism.

Females with PCOS have higher thyroid antibody levels, larger thyroid volumes and their thyroids are more hypoechoic (compatible with thyroiditis) when compared to controls.[10][24]

Conclusion:

By our study we can conclude that there is increasing in prevalence of PCOD and hypothyroid cases among the obese person which is most important adverse effect of this two condition and cause of various other illness. Obese women in the reproductive age should go for the investigation of PCOS and Hypothyroidism. It is well known fact that weight reduction is most important way to reduce the symptom of this condition.

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