

## Clinical correlation of PCOS and increased risk of gall bladder stones with radiological findings-original research article

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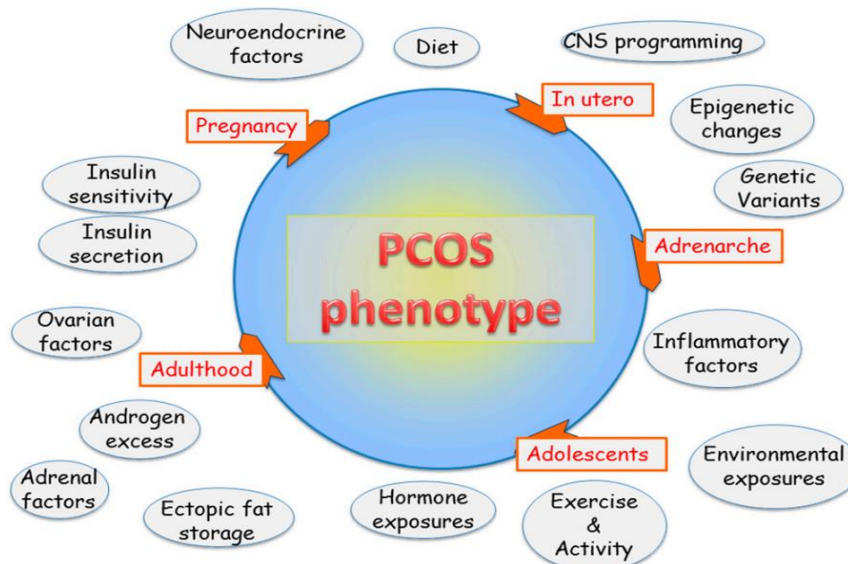
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### Abstract:

Polycystic ovary syndrome (PCOS), a disorder primarily characterized by signs and symptoms of androgen excess and ovulatory dysfunction, disrupts hypothalamic–pituitary–ovarian (HPO) axis function. Depending on diagnostic criteria, this disorder affects; 6% to 20% of reproductive aged women <sup>1,2</sup>. PCOS presents as a phenotype reflecting a self-perpetuating vicious cycle involving neuroendocrine, metabolic and ovarian dysfunction. PCOS reflects the interactions among multiple proteins and genes influenced by epigenetic and environmental factors (Fig. 1) <sup>3</sup>



**Figure 1.** Factors contributing to PCOS phenotype. PCOS encompasses a woman's life cycle. Factors potentially impacting the pathophysiology of PCOS are shown in circles. Not all factors affect each individual. PCOS epitomizes a biologic network of interacting neuroendocrine, hormonal, metabolic, genetic, and environmental influences.

Insulin resistance decreases suppression of adipocyte lipolysis, resulting in increased serum free fatty acids and triglycerides, ultimately leading to increased hepatic de novo lipogenesis and hyperlipidemia <sup>4</sup> Another consequence is increased fat storage in skeletal muscle, liver, and

pancreas because the adipose tissue capacity to store lipid is exceeded. In the liver, ectopic fat storage is labelled hepatic steatosis, which can develop into nonalcoholic fatty liver disease <sup>5</sup>. Additional comorbidities include decreased quality of life, depression, anxiety, eating disorders and disordered eating, and altered body image <sup>6,7,8,9</sup>. Quality of life has come down drastically in the present situation due to stress related conditions, ambitions, depression and altered junk and binge eating.

Women in the reproductive age group are having more risk of PCOS and gall bladder stones. Obesity, insulin resistance and low vitamin D levels are present in more than 50% patients with PCOS, these factors along with hyperandrogenism could have adverse effects on long-term health. Gallstones are the most frequent and expensive of digestive diseases that require hospitalization. Gallbladder disease is associated with many of the characteristics of PCOS, for example, the metabolic syndrome, insulin resistance and particularly T2D <sup>10</sup>. Hence, the findings of a three times increased risk of gallbladder disease in patients with PCOS and that 3.3% patients with PCOS had a previous diagnosis of cholecystitis were not surprising <sup>11</sup> and day to day life I of sedentary status which has increased the risk more..

### Aims and objectives

Polycystic ovary syndrome (PCOS) is a common endocrine disorder predominantly affecting women of reproductive age. Clinical manifestations are diverse including hyperandrogenism, anovulation, infertility and increased risk of metabolic diseases <sup>12</sup>. This research study included the reproductive age group of women age ranging from 21 to 45 years. These patients were evaluated clinically for hormonal, endocrine, physical and biochemical parameters. The main idea behind the study was to correlate the relation of PCOS with obesity leading to increased risk of gall bladder disease.

### Materials and methods:

Patients with PCOS who were physically obese and suffering from GIT involving gall bladder disease were evaluated clinically and also ultrasonographically. The patients attending gynaecology OPD were included in this study.

#### Observations:

##### Clinical evaluation of overweight

Variables	overweight	Percentage
Age (years)		
21-25	62	26.05
25 - 30	92	38.65
30-35	43	18.0
35-40	23	9.66
45 and above	18	7.64

##### Hormonal imbalance

Variables	Frequency	Percentage
Age (years)		
21-25	68	40.47
25 - 30	42	25
30-35	35	20.83
35-40	23	13.69
45 and above		

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### Discussion:

We explained that free physical examination, laboratory tests and abdominal ultrasonography would be performed. Subjects were asked to fast overnight for at least 8 h. Ultrasound assessments were performed and a 5-12 MHz linear-array transducers for evaluation of gallbladder, liver and abdominal fat. GSD was determined according to the following criteria: movable echoes in a visible gallbladder lumen with or without acoustic shadow; impeded echoes with acoustic shadow in a visible gallbladder lumen; or invisible gallbladder in a subject with an appropriate scar of cholecystectomy who has reliable history of stone in the removed gallbladder<sup>13</sup>. Presence of fatty liver was inspected according to the ultrasonographic scoring system described by Hamaguchi, et al., which provides high sensitivity (91.7%) and specificity (100%) for the histological diagnosis of fatty liver<sup>14</sup>.

### Conclusion:

When compared to the other studies done earlier and present study also confers the same that in reproductive age women with PCOS having gallstones is multifactorial and the diagnostic criteria also confirms the same.

**Interest of conflict:**NIL

**Source of funding:**NIL

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