Prevalence of prediabetes among female with polycystic ovary syndrome

Done by:

Hind Mahmoud Hussien

Supervised by:

Dr . Rana Abdulalsalam Majeed

Abstract

Background: Between 12 to 15% of women have polycystic ovarian syndrome (PCOS), which is characterized by clinical/biochemical hyperandrogenism , oligomenorrhea and PCO morphology on ultrasound.

Aims of the study: Identify the prevalence of prediabetes among female with polycystic ovarian syndrome.

Methodology: cross-sectional study was conducted between November 2023 to March 2024 was conducted on 50 women with polycystic ovarian

syndrome who attended the consultation clinic at Al-Batool Teaching hospital.

Inclusion criteria: women with PCOS older than 18 who meet the Rotterdam criteria for diagnosis were screened for preexisting Diabetes or prediabetes.

Results: The mean age was 28.21 years. The mean BMI was 32 , 20% of patients has HBA1C of less than 5.7% , 38% were between 5.7%-6.5% and 42% were more than 6.5%.

Conclusion: We conclude that the prevalence of prediabetes in female with polycystic ovary syndrome is 38% while the prevalence of diabetes mellitus in female with polycystic ovary syndrome is 42%.

Keywords: Prediabetes, PCOS, Polycystic ovary syndrome.

Introduction

For women of reproductive age, the most prevalent endocrinopathy is polycystic ovarian syndrome, or PCOS.(1) PCOS is the primary cause of anovulatory infertility and is primarily characterized by oligo- or anovulation, polycystic ovaries, and clinical and/or biochemical hyperandrogenism. Nevertheless, a number of metabolic disorders,

including impaired glucose metabolism, have been closely linked to PCOS.(2)

Numerous cross-sectional and prospective studies have reported higher rates of impaired glucose tolerance (IGT) and type 2 diabetes mellitus (T2DM) in these patients. (3)

In a preliminary case-control research including 80 age- and weight-matched controls and 254 PCOS patients, the incidence of IGT was 2.7 times greater in the former group.(4) Additionally, 7.5% of PCOS patients had T2DM, compared to 0% of the women in the control group.(5)

In an extensive research conducted recently on 11,035 PCOS patients, the prevalence of T2DM was 2.45 times greater than in the age-matched control group.(6)

In a meta-analysis of 13 studies comparing PCOS patients' and controls' IGT prevalence, IGT was 2.48 times higher in the former group.(7)

Similarly, a meta-analysis of 15 studies found that people with PCOS had a 4.5-fold greater prevalence of T2DM than controls.(8) Notably, research with populations matched for body mass index (BMI) also found comparable discrepancies. Notably, estimates range from 15% to 35.6% for

incidence instances of type 2 diabetes in white women, with PCOS being the primary cause. (9)

Aims of the study:

The aim of the study was to identify the prevalence of prediabetes among female with polycystic ovarian syndrome.

Methodology

A Descriptive cross-sectional study was conducted between November 2023 to March 2024 was conducted on 50 women with polycystic ovarian syndrome who attended the consultation clinic at Al Batool Teaching hospital. Inclusion criteria were pregnant women in the first trimester to screen for preexisting Diabetes.

Statistics analysis

After collection, data were checked manually and analyzed by computer based program Statistical package of social science(SPSS) 26 version. Results were expressed as mean, or frequency or percentage.

Result

Data were collected from 50 women with polycystic ovarian syndrome who attended the consultation clinic at Al Batool Teaching hospital. The mean age was 28.21 years. The weight 4(8%) were less than 60 kg, 10(28%) were 60-69 kg, 15(30%) were 70-79 kg and 12(24%) were more than 80 kg . 41% of patients were urban while 9% were rural as shown in table 1.

Table (1): Distribution of demographic data among sample.

Variables	N=50	%
Age	28.21 years	
Weight		
< 60 kg	4	8%
60-69 kg	19	38%
70-79 kg	15	30%
>80 kg	12	24%
Residence		
Urban	41	82%
Rural	9	18%

Table 2 show the HbA1c value of the sample, 20% were less than 5.7%,

38% were between 5.7%-6.5% and 42% were more than 6.5%.

Table(2) : Distribution of HbA1c value among the sample.

HbA1c	N=50	%
< 5.7%	10	20%
5.7%-6.5%	19	38%
>6.5%	21	42%

Table 3 show the glucose value, 52% were have normal glucose, 36% were have impaired glucose and 12% were diabetes.

Table(3): Distribution of glucose value among the sample.

Glucose	N=50	%
Normal glucose	26	52%
Impaired glucose	18	36%
Diabetes	6	12%

Discussion

Frequency of prediabetes and type 2 diabetes given the well-established association between PCOS and IR, which is independent of weight. (10,11) We found that about half of patient with polycystic ovary syndrome their weight gain because Because elevated insulin promotes fat accumulation, increases appetite, and inhibits the breakdown of stored fat, it can all lead to weight gain.(12)

This agree with study done by Rachon et al.(13) obese women, particularly those with PCOS, have been identified as particular high-risk groupings for the development of prediabetes, type 2 diabetes, and perhaps cardiovascular disease.

We found that the prevalence of prediabetes in female with polycystic ovary syndrome is 38% while the prevalence of diabetes mellitus in female with polycystic ovary syndrome is 42%.

A study demonstrate less percentage of our result which found that of the 148 women with PCOS, 18 (12%) had prevalent prediabetes, and 5 (3%) of these individuals developed diabetes throughout the follow-up period. 130 (88%) of the 148 individuals who met the eligibility criteria did not have prediabetes at baseline.(14)

When comparing the prevalence of IGT (30%) and T2DM (4%), which are both considerably higher in obese women with PCOS, to the control group of patients without PCOS (15.7% IGT, 0 T2DM), Legro et al.(15) showed differences.

Additionally, a comparable research conducted in females with PCOS and IGT found that the rates at which older women converted from prediabetes to diabetes varied from 6% over three years to 13.4% over eight years.(16)

Conclusion

We conclude that the prevalence of prediabetes in female with polycystic ovary syndrome is 38% while the prevalence of diabetes mellitus in female with polycystic ovary syndrome is 42%.