Egyptian Fertility Sterility Society

Are childhood and adolescent adiposity associated with risk of PCOS?

What is known already?

Over the last 40 years, the global prevalence of obesity in women has increased 2.5- fold from 6% to 15%. (1)

The incidence of PCOS according to Rotterdam Criteria as well as Androgen Excess rand PCOS (AE-PCOS) Society criteria is 10 %

(8-13% &7-13% respectively). (2)

A meta-analysis based on the Global Burden of Disease Study 2017, estimated that the global PCOS incidence rate increased by 1.45% (1.43-1.47%) from 2007 to 2017(3)

Concerning the prevalence of overweight and obesity with PCOS, a previous meta-analysis published in 2012 demonstrated that women with PCOS had an increased prevalence of overweight (relative risk" RR" : 1.95, 95% CI: 1.52, 2.50) and obesity (RR: 2.77, 95% CI: 1.88, 4.10) compared with controls (4). This study, however, was limited by including a small number of adolescents.

What is New?

A recent Mendelian randomization (MR) study with meta-analysis systematic review published in March 2023 (5) has reported that:
1-Significant associations were shown between body composition and PCOS incidence.
2- For adolescents with overweight and/or obesity, the PCOS odds

were greater than for adult (for every standard deviation increase in BMI (4.8 kg/m2), the odds of PCOS increased by 2.76(2.27‑3.35).

3-Childhood body size had an independent effect on PCOS odds after adjusting for adult body size (OR: 2.56, 1.57‑4.20).

Implications of the findings.

This recent study demonstrates for the first time a critical role of the impact of excess childhood/adolescent adiposity on the pathophysiology of adult PCOS.

Overall, effective weight maintenance, even from the early years, is likely to reduce the risk of devolving PCOS and to minimize the risk of later cardiometabolic complications.

References

1-Lindsay M Jaacks , Stefanie Vandevijvere , An Pan , Craig J c Gowan, Chelsea Wallace , Fumiaki Imamura , Dariush Mozaffarian , Boyd Swinburn, Majid Ezzati

The ObesityTransetion:Stages of the global epidemic. Lancet Diabetes Endocrinol 7 (3):231- 240, 2019

2-Bozdag G, Mumusoglu S, Zengin D, Karabulut E, Yildiz BO, The prevalence and phenotypic features of polycystic ovary syndrome:

a systematic review and meta-analysis. Hum Reprod.;31(12):2841-2855, 2016

3-Jingjing Liu, Qunhong Wu, Yanhua Hao, Mingli Jiao, Xing Wang, Shengchao Jiang, Liyuan Han, Measuring the global disease burden of polycystic ovary syndrome in 194 countries: Global Burden of Disease Study 2017 *Human Reproduction*, Volume 36, Issue 4, Pages 1108–111 April 2021

4-Lim SS, Davies MJ, Norman RJ, Moran LJ. Overweight, obesity and central obesity in women with polycystic ovary syndrome: a systematic review and meta-analysis. Hum Reprod Update;18:618–637. 2012

5-Laurence J. Dobbie Bradley Pittam, Sizheng Steven Zhao, Uazman Alam1,2, Theresa J. Hydes1,2, Thomas M. Barber5,6, and Daniel J. Cuthbertson. Childhood, adolescent, and adulthood adiposity are associated with risk of PCOS: a Mendelian randomization study with meta-analysis, March 12, 2023,Human Reproduction March 12, 2023