Metformin versus Myo-inositol in PCOS: a meta-analysis of randomized clinical trials

Fabio Facchinetti, Mother-Infant Department, University Modena and Reggio Emilia, Modena, Italy

Abstract

Statement of the Problem: Metformin (MET) and Myo-inositol (MI) are well-recognized as first-line approaches for the treatment of polycystic ovary syndrome (PCOS). MET is the most common insulin sensitizer, used as off-label drug for PCOS in many Countries. However, its use may be limited by side effects. A qualitative and quantitative review of the literature was conducted to compare these two treatments, a synthetic biguanide and a natural molecule respectively, for efficacy and safety in PCOS patients. Methodology & Theoretical Orientation: Randomized clinical trials were identified from 1994 through 2017 using MEDLINE, Cochrane Library, PubMed and ResearchGate. Included studies were limited to the investigation comparing MET versus MI on fasting insulin, HOMA index, testosterone, SHBG, BMI and adverse effects. Standardized mean difference (SMD) or risk ratios (RRs) with 95% CIs were calculated. Findings: No evidence of difference in efficacy between MET and MI was found on fasting insulin (SMD = 0.153 µU/ml, 95% CI: -0.335 to 0.641, p = 0.538), HOMA index (SMD = 0.371, 95% CI: -0.502 to 1.244, p = 0.405), testosterone (SMD= 0.039, 95% CI: -0.203 to 0.281, p= 0.754), SHBG levels (SMD= -0.132 nmol/l, 95% CI: -0.909 to 0.646, p = 0.740) and BMI (SMD = -0.008, 95% CI: -0.237 to 0.220, p =0.944). However, there was strong evidence of an increased risk of adverse events among women receiving MET compared to those receiving MI (RR = 4.478, 95% CI: 2.512 to 7.984, p < 0.001). Conclusion & Significance: Overall these results showed that treatment with MI is as effective as MET in recovering the clinical and metabolic profile of PCOS women. The better tolerability of MI makes such treatment more accepted, improving patients' compliance.

Recent Publications

1. Pundir J, Psaroudakis D, Savnur P, Bhide P, Sabatini L, Teede H, Coomarasamy A, Thangaratinam S (2018) Inositol treatment of anovulation in women with polycystic ovary syndrome: a meta-analysis of randomised trials. BJOG 125:299-308
2. Gateva A, Unfer V, Kamenov Z (2018) The use of inositol(s) isomers in the management of polycystic ovary syndrome: a comprehensive review. Gynecological Endocrinology 8:1-6
3. Unfer V., Facchinetti F, Orrù B, Giordani B, Nestler J (2017) Myo-inositol effects in women with PCOS: a meta-analysis of randomized controlled trials. Endocrine Connections 6:647-658.
4. Fulghesu AM, Romualdi D, Di Florio C, Sanna S, Tagliaferri V, Gambineri A, Tomassoni F, Minerba L, Pasquali R, Lanzone A (2012) Is there a dose–response relationship of metformin treatment in patients with polycystic ovary syndrome? Results from a multicentric study. Human Reproduction 27:3057–3066.
5. Practice Committee of the American Society for Reproductive Medicine. Practice Committee of the American Society for Reproductive Medicine (2017). Role of metformin for ovulation induction in infertile patients with polycystic ovary syndrome (PCOS): a guideline Fertility and Sterility 108:426-441



Biography

Professor Fabio Facchinetti has a Degree in Medicine and Surgery at the University of Cagliari and is post-graduated in Gynecology and obstetrics at the University of Modena. Associate Professor of Obstetrics and Gynecology at the Faculty of Medicine and Surgery of the University of Modena and Reggio Emilia since 1988. From 2002 is the President of the Midwifery School at the same University. Since 2012 is Chairmen of the Unit of Obstetrics and Gynecology of Modena University Hospital "Policlinico". Co-author of more than 400 publications in indexed scientific journals. Editor of 9 monothematic books and organizer of numerous local and international conferences. Winner of various scientific prizes.

Email:
fabio.facchinetti@unimore.it

Notes/Comments: