INPLASY

The impact of novel hypoglycemic medications on hormonal and metabolic parameters in patients with polycystic ovary syndrome: a Bayesian network meta-analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202410001

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 01 January 2024 and was last updated on 01 January 2024.

INTRODUCTION

Review question / Objective Insulin resistance-related metabolic disorders are closely associated with hyperandrogenism. The interaction between the two further exacerbates the condition of patients with polycystic ovary syndrome (PCOS). New antidiabetic drugs may have a beneficial effect on the sex hormones and metabolic disorders of PCOS patients. This study aims to analyze and evaluate the effects of new hypoglycemic drugs on the sex hormones and metabolic parameters of patients with PCOS.

Condition being studied Polycystic Ovary Syndrome (PCOS) affects 6%-20% of women of reproductive age worldwide and is a common endocrine disorder in clinical practice. This condition spans the entire lifecycle of a woman from adolescence to menopause and is closely associated with reproductive, endocrine, and psychological health. Moreover, it also increases the risk of cardiovascular diseases, including myocardial infarction, stroke, etc., which are the leading causes of death in women. Presently, novel antidiabetic agents such as GLP 1 receptor agonists (GLP-1RA) and Sodium-Glucose Co-Transporter 2 Inhibitors (SGLT-2I) have shown promise in correcting hormonal and metabolic imbalances in PCOS. Moreover, research indicates that Dipeptidyl Peptidase 4 inhibitors(DPP-4I) can enhance insulin sensitivity and ovarian morphology, reducing fasting glucose and androgen levels.

METHODS

Participant or population Patients with Polycystic Ovary Syndrome.

Intervention Novel Hypoglycemic Medications (Glucagon-Like Peptide 1 Receptor Agonists (GLP-1 RA), Dipeptidyl Peptidase 4

Inhibitors(DPP-4I), and Sodium-Glucose Co-Transporter 2 Inhibitors(SGLT-2I)) .

Comparator Placebo or Metformin.

Study designs to be included RCT.

Eligibility criteria Inclusion criteria:1.Randomized controlled trials 2.Patients diagnosed with PCOS according to the Rotterdam criteria established by the European Society of Human Reproduction and Embryology and the American Society for Reproductive Medicine in 2003 3.Non-pregnant women Exclusion criteria:1.Unable to obtain full text or outcome dataDuplicate publications 2.Studies including pregnancy period 3.Interventions that do not conform to standards 4.Outcome indicators that do not conform to standards 5.Incomplete data 6.Non-RCT literature, such as network meta-analyses, meta-analyses, systematic reviews, conference papers, animal studies, retrospective studies, observational studies, case reports, etc.7.Studies using a blank control (placebo without active intervention).

Information sources All literature in this study was obtained by searching PubMed, the Cochrane Central Register of Controlled Trials, Embase, Ovid, Scopus, and Web of Science, with the time range set from the creation of the database to May 11, 2023. After individual searches in each database, key literature references were manually searched to supplement any missing literature.PubMed, the Cochrane Central Register of Controlled Trials, Embase, Ovid, Scopus, Web of Science.

Main outcome(s) Serum total testosterone(TT), homeostatic model assessment of insulin resistance(HOMA-IR).

Additional outcome(s) Body mass index(BMI), and sex hormone binding globulin(SHBG).

Data management Use Endnote21 software to manage references. First, search for and delete duplicate references; second, screen preliminarily by reading the titles and abstracts of the papers; finally, have two researchers read the full texts to further assess whether the studies meet the inclusion criteria. If there are disagreements in the search strategy and literature selection process, resolve the differences through discussion with a third researcher.

Quality assessment / Risk of bias analysis This study used the bias risk assessment tool recommended by the Cochrane Handbook version 5.1.0 to evaluate the included studies. The results independently assessed by two researchers were combined and used to create a risk of bias graph with Review Manager software version 5.4. The risk of bias assessment includes the following: random sequence generation, allocation concealment, blinding of participants and researchers, blinding of outcome assessment, incomplete outcome data, selective reporting, and other biases.

Strategy of data synthesis The Standardized Mean Difference (SMD) and its Credible Interval (CrI) are used as the effect size statistics.

Subgroup analysis Subgroup studies are conducted based on the patient's age, marital status, and body mass index.

Sensitivity analysis If the combined result of the remaining literature does not differ significantly after the deletion of any one article, it means that the result is robust as determined by sensitivity analysis.

Country(ies) involved China.

Keywords Glucagon-Like Peptide 1 Receptor Agonists; Dipeptidyl Peptidase 4 Inhibitors; Sodium-Glucose Co-Transporter 2 Inhibitors; Polycystic ovary syndrome; Bayesian network meta-analysis.

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