INPLASY PROTOCOL

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None declared.

Comparation of magnetic resonance hysterosalpingography and hysterosalpingosonography for the assessment of fallopian tubal occlusion of female infertility: A protocol for systematic review and meta-analysis

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Review question / Objective: **To evaluate the diagnostic performance of magnetic resonance hysterosalpingography (MR-HSG) for fallopian tubal occlusion in the context of female infertility when compared to the diagnostic performance of hysterosalpingosonography (Sono-HSG) in evaluation of fallopian tubal occlusion of female infertility.**
Eligibility criteria: **2.1.1. Type of study. This study will only include high quality clinical cohort or case control studies that evaluate the diagnostic performance of MR-HSG when compared to Sono-HSG in evaluation of fallopian tubal occlusion of female infertility.2.1.2. Type of patients. The patients should be those who had undergone fallopian tubal occlusion of female infertility. 2.1.3. Intervention and comparison. Fallopian tubal occlusion of female infertility of all patients were assessed with Laparoscopic examination or conventional X-ray hysterosalpingography.2.1.4. Type of outcomes. The primary outcomes include a semi-quantitative scoring system, through which fallopian tubal occlusion of female infertility was graded by means of both MR-HSG and Sono-HSG.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 15 November 2021 and was last updated on 15 November 2021 (registration number INPLASY2021110050).

INTRODUCTION

Review question / Objective: **To evaluate the diagnostic performance of magnetic resonance hysterosalpingography (MR-HSG) for fallopian tubal occlusion in the context of female infertility when compared to the diagnostic performance of hysterosalpingosonography (Sono-HSG) in evaluation of fallopian tubal occlusion of female infertility.**

Condition being studied: **In recent years, the incidence of infertility has been on the rise, and tubal subfertility or infertility is credited with up to 30% of the etiology of**

infertility . The main factors that cause fallopian tubal infertility include pelvic inflammation, endometriosis, mycoplasma infection, history of pelvic and abdominal surgery, and congenital anatomical abnormalities [2]. An assessment of fallopian tube patency is an important part of infertility.X-HSG is the most commonly used in the clinic to diagnose fallopian tubal occlusion. However, the main disadvantages of this technique are the exposure of the human body to ionizing radiation and adverse reactions to iodine and meanwhile has a low sensitivity for the diagnosis of pelvic adhesions, which is why it cannot replace laparoscopy. In addition, many doctors do not recommend the use of this method because patients are unable to have sex for 3 months after the examination and there is a risk of pulmonary embolism. MR-HSG is a novel technique used in evaluating tubal patency with very few pioneering studies at both national and international levels, which is less invasive and avoids exposure of ovaries to ionizing radiation. Having the inherent advantage of magnetic resonance (MR) in imaging the pelvis, MR-HSG is an innovative tool for female infertility evaluation and may be used as a one-stop investigation tool in detecting uterine, ovarian, and tubal pathologies.In recent years, Sono-HSG has been increasingly employed. This technique is well tolerated and easily performed and it may not only assess tubal patency but also detect uterine cavity anomalies. In addition, the technique allows simultaneous observation of the ovary and myometrium, avoiding ionizing radiation. Two-dimensional hysterosalpingo-contrast-sonography(2D-HyCoSy) and three/four-dimensional hysterosalpingo-contrast-sonography(3D/4D-HyCoSy) have been applied in fallopian tubal occlusion in women with infertility. High-quality Meta-analysis has been increasingly regarded as one of the key tools for achieving evidence. Therefore, the present meta-analysis aims to evaluate whether MR-HSG is more effective than Sono-HSG in the diagnosis of female infertility with fallopian tubal obstruction.

METHODS

Participant or population: The patients should be those who had undergone fallopian tubal occlusion of female infertility.

Intervention: Fallopian tubal occlusion of female infertility of all patients were assessed with Laparoscopic examination or conventional X-ray hysterosalpingography.

Comparator: Fallopian tubal occlusion of female infertility of all patients were assessed with Laparoscopic examination or conventional X-ray hysterosalpingographyDXA.

Study designs to be included: The primary outcomes include a semi-quantitative scoring system, through which fallopian tubal occlusion of female infertility was graded by means of both MR-HSG and Sono-HSG.

Eligibility criteria: 2.1.1. Type of study. This study will only include high quality clinical cohort or case control studies that evaluate the diagnostic performance of MR-HSG when compared to Sono-HSG in evaluation of fallopian tubal occlusion of female infertility.2.1.2. Type of patients. The patients should be those who had undergone fallopian tubal occlusion of female infertility. 2.1.3. Intervention and comparison. Fallopian tubal occlusion of female infertility of all patients were assessed with Laparoscopic examination or conventional X-ray hysterosalpingography.2.1.4. Type of outcomes. The primary outcomes include a semi-quantitative scoring system, through which fallopian tubal occlusion of female infertility was graded by means of both MR-HSG and Sono-HSG.

Information sources: PubMed, Web of Science, Cochrane Library, and Chinese biomedical databases will be searched from their inceptions to the May 31, 2021, without language restrictions. The search strategy for PubMed is shown in Table 1. Other online databases will be used in the same strategy.

Main outcome(s): This systematic review will investigate whether MR-HSG has more diagnostic value than Sono-HSG in evaluation of fallopian tubal occlusion of female infertility.

Quality assessment / Risk of bias analysis: The STATA version 15.1 software (Stata Corporation, College Station, TX, USA) will be used for meta-analysis. We calculated the pooled summary odds ratio (OR) and its 95% confidence interval (CI). The Cochran's Q-statistic and I2 test will be used to evaluate potential heterogeneity between studies. If the Q-test shows a P50%, indicating significant heterogeneity, and the random effect model will be employed or if heterogeneity is not significant, the fixed-effects model was used. If it is possible, we will perform meta-analysis to analyze the pooled outcome data when acceptable homogeneity has been identified. Otherwise, we will conduct subgroup analysis to investigate potential causes for substantial heterogeneity among eligible studies. Sensitivity analysis will be performed to evaluate the influence of a single study on the overall estimate. We will use Begger's funnel plots and Egger's linear regression test to investigate publication bias.

Strategy of data synthesis: Two authors will independently select the trials according to the inclusion criteria, and import into Endnote X9. Then remove duplicated or ineligible studies. Screen the titles, abstracts, and full texts of all literature to identify eligible studies. All essential data will be extracted using previously created data collection sheet by 2 independent authors. Discrepancies in data collection between 2 authors will be settled down through discussion with the help of another author. The following data will be extracted from each included research: year of article, first author's surname, sample size, number of every grade. The quality of selected studies will be independently evaluated according to a tool for the quality assessment of methodological index for non-randomized studies (MINORS). The MINORS criteria included 12 assessment items. Each of these items is scored as "yes" (2), "no" (0), or "unclear" (1). MINORS score ranged from 0 to 24; and score≥17 indicate a good quality. Any disagreements between 2 investigators will be solved through discussion or consultation by a 3rd investigator.

Subgroup analysis: If the Q-test shows a P50%, indicating significant heterogeneity, and the random effect model will be employed or if heterogeneity is not significant, the fixed-effects model was used. If it is possible, we will perform meta-analysis to analyze the pooled outcome data when acceptable homogeneity has been identified. Otherwise, we will conduct subgroup analysis to investigate potential causes for substantial heterogeneity among eligible studies.

Sensitivity analysis: Sensitivity analysis will be performed to evaluate the influence of a single study on the overall estimate. We will use Begger's funnel plots and Egger's linear regression test to investigate publication bias.

Country(ies) involved: China.

Keywords: magnetic resonance hysterosalpingography; female infertility; hysterosalpingosonography; fallopian tubal occlusion.

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