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Novel endoscopic techniques for the diagnosis of gastric Helicobacter pylori infection: a systematic review and network meta-analysis

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ADMINISTRATIVE INFORMATION

Support - The Second Affiliated Hospital of Anhui University of Chinese Medicine.

Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 12 November 2023 and was last updated on 12 November 2023.

INTRODUCTION

Review question / Objective The purpose of this study was to compare the diagnostic value of different novel endoscopic techniques for gastric Helicobacter pylori. The study type was observational, the study population was positive and negative patients with gastric helicobacter pylori infection, the diagnostic method was novel endoscopic technique, and the control group was gold standard detection for gastric helicobacter pylori infection, such as RUT, UBT test or other endoscopic techniques.

Condition being studied Helicobacter pylori infection is widespread in the world, with over 50% of the population infected with Helicobacter pylori, and the infection rate is even higher in developing countries. Relevant statistics show that almost all Hp infected persons have chronic active gastritis, 15%-20% develop peptic ulcers, 5%-10% develop HP-related dyspepsia, and about 1% develop gastric malignancies. Previous studies have shown that it is difficult to detect Helicobacter pylori and perform an accurate biopsy using white light endoscopy alone. To overcome this limitation, several enhanced endoscopic imaging techniques have been developed, and the analysis of gastric mucosal surface details has begun to resemble histological examination, aiming to provide real-time and accurate endoscopic diagnosis.

METHODS

Participant or population Positive and negative patients with gastric Helicobacter pylori infection.

Intervention Novel endoscopic techniques.

Comparator Gold standard test for Helicobacter pylori infection such as RUT, UBT test or other endoscopic techniques.

Study designs to be included Observational study.

Eligibility criteria (1). Inclusion criteria1. The experimental group with novel endoscopic technology was used as a diagnostic measure for Helicobacter pylori infection; 2. Rapid urease test, breath test, etc. as the gold standard for diagnosis; 3. Diagnostic techniques include new endoscopic techniques and not less than two diagnostic methods; 4. The following outcome measures were reported: true positive (TP), true negative (TN), false positive (FP), false negative (FN), sensitivity (Se), specificity (Sp), positive predictive value (PPV) or negative predictive value (NPV). In cases where NPV, PPV, TP, TN, FP or FN are not reported, the calculation is based on known variables (Se and Sp). 5. Prospective or retrospective study design. (2). Exclusion criteria1. Lack of clear inclusion and exclusion criteria in the study; 3. Guidelines, systematic reviews and meta-analyses, narrative reviews, letters, editorials, research protocols, case reports, short newsletters, etc. 4. Missing research data, repeated publication of articles, etc. Studies that met at least one exclusion criteria were excluded from the analysis.

Information sources Pubmed、EMBASE、Web of Science.

Main outcome(s) Sensitivity, specificity, positive prediction and negative predictive value of endoscopic screening for the diagnosis of Helicobacter pyloriAccording to the guidelines, endoscopic indications of enlarged gastric fovea, loss of collecting veins, and loss of capillary networks are considered to be Helicobacter pylori infection.

Quality assessment / Risk of bias analysis Two reviewers will independently assess risk of bias based on Quality Assessment of Diagnostic Accuracy Studies 2 From the Cochrane Collaboration include:1. Patient Selection; 2. Index Test; 3. Reference Standard; 4. Flow and Tming. results of bias assessment will be presented in a figure and a graph indicating low, high or unclear risk of bias for each of the 4 items in each trial.

Strategy of data synthesis R 4.3.1 software was selected for mesh meta-analysis. Heterogeneity was considered if I*I was greater than 50% and P was less than 0.1. There was heterogeneity in the selection of random effects combined effect size, while there was no heterogeneity in the selection of fixed effects combined effect size.

Subgroup analysis Subgroups were studied according to the duration of disease was greater than six months.

Sensitivity analysis The STATA software performs a sensitivity analysis to reflect the sensitivity of the article by the change of the effect size after deleting one of the articles.

Country(ies) involved China.

Keywords Gastric Helicobacter pylori infection, novel endoscopic techniques, diagnosis, systematic review, mesh meta-analysis Helicobacter pylori infection, novel endoscopic techniques, diagnosis, Systematic review.

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