

# INPLASY PROTOCOL

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**Corresponding author:**  
Liqin Zhao

zhaolq0129@163.com

**Author Affiliation:**  
Beijing Tiantan  
Hospital, Capital Medical  
University.

**Support:** 7192042.

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**Conflicts of interest:**  
None declared.

## Rapid switching kVp dual energy CT Material Quantitative Determination for Non-invasive Assessment of Portal Hypertensive Esophagus Varices in Patients with Hepatic Cirrhosis: A Systematic Review and Meta-analysis

Wang, Y<sup>1</sup>; Yan, C<sup>2</sup>; Zhao, L<sup>3</sup>.

**Review question / Objective:** This meta-analysis investigated the value of rsDECT -based non-invasive assessment of the severity of esophagus varices and the risk of hemorrhage in patients with cirrhotic portal hypertension.

**Eligibility criteria:** Studies meeting the following criteria were included: Studies evaluating the effect of rsDECT on EV in patients with hepatic cirrhosis, and published in Chinese or English; The diagnosis was based on acknowledged gold standard. Containing complete four-grid table data of diagnostic tests, which can be extracted directly or indirectly. Review, case-report, conference summary, animal study, and repeatedly published study were excluded. Based on the severity of EV shown in the endoscopy, patients in the study group were classified into the mild EV (EV1), medium EV (EV2), or severe EV (EV3) groups according to the General Rules for Recording Endoscopic Findings of Esophagogastric varices (The Japan Society for Portal Hypertension) : EV1, slightly linear expansions; EV2, moderately beaded expansions; EV3, significantly nodular or neoplastic expansions.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 April 2022 and was last updated on 19 April 2022 (registration number INPLASY202240121).

### INTRODUCTION

**Review question / Objective:** This meta-analysis investigated the value of rsDECT -based non-invasive assessment of the severity of esophagus varices and the risk

of hemorrhage in patients with cirrhotic portal hypertension.

**Condition being studied:** All studies applied GE Discovery CT 750 HD (GE Healthcare) rsDECT, with the tube voltage of 140kVp and 80kVp switchable within

0.5ms. Literature screening was conducted by two reviewers independently, who had more than 3 years' experiences in radiation diagnosis, and was cross-checked. Disagreements were settled by a third reviewer.

## METHODS

**Participant or population:** Patients with Hepatic Cirrhosis.

**Intervention:** Rapid switching kVp dual energy CT.

**Comparator:** Gold standard.

**Study designs to be included:** Diagnostic test.

**Eligibility criteria:** Studies meeting the following criteria were included: Studies evaluating the effect of rsDECT on EV in patients with hepatic cirrhosis, and published in Chinese or English; The diagnosis was based on acknowledged gold standard. Containing complete four-grid table data of diagnostic tests, which can be extracted directly or indirectly. Review, case-report, conference summary, animal study, and repeatedly published study were excluded. Based on the severity of EV shown in the endoscopy, patients in the study group were classified into the mild EV (EV1), medium EV (EV2), or severe EV (EV3) groups according to the General Rules for Recording Endoscopic Findings of Esophagogastric varices (The Japan Society for Portal Hypertension) : EV1, slightly linear expansions; EV2, moderately beaded expansions; EV3, significantly nodular or neoplastic expansions.

**Information sources:** PubMed, Embase, Cochrane Library, Web of Science, Chinese National Knowledge Infrastructure (CNKI), WanFang, and China Biology Medicine Disc (CBM).

**Main outcome(s):** Pooled statistics included the sensitivity, specificity, positive likelihood ratio, negative likelihood ratio, and diagnostic odds ratio (DOR), with 95% confidence intervals (95% CIs). Area under

summary receiver operating characteristic curve (SROC) was calculated. Funnel plot was applied for publication bias assessment. A p value less than 0.05 indicated statistical significance.

**Quality assessment / Risk of bias analysis:** Revised Quality Assessment of Diagnostic Accuracy Studies (QUADAS-2) was adopted to assess the quality of included studies, and Review Manager 5.4 software was applied to perform visualized analysis for publication bias.

**Strategy of data synthesis:** Data analysis was conducted using Stata 15.0 (StataCorp LLC, College Station, TX), and the bivariate mixed effects model was applied for meta-analysis.

**Subgroup analysis:** Not involved.

**Sensitivity analysis:** Data analysis was conducted using Stata 15.0.

**Country(ies) involved:** China.

**Keywords:** Cirrhosis, portal hypertension, esophagus varices, Rapid switching kVp dual energy CT, meta-analysis.

### Contributions of each author:

Author 1 - Yingxuan Wang - Author 1 drafted the manuscript, Data extraction and quality assessment.

Email: wangyx5577@126.com

Author 2 - Cheng Yan - Data extraction and quality assessment.

Email: yancheng1995@mail.ccmu.edu.cn

Author 3 - Liqin Zhao.

Email: zhaolq0129@163.com