INPLASY PROTOCOL

To cite: Sui et al. Diagnostic accuracy of ultrasound superb microvascular imaging for focal liver lessions: A protocol for systematic review and meta-analysis. Inplasy protocol 2020120081. doi: 10.37766/inplasy2020.12.0081

Received: 15 December 2020

Published: 15 December 2020

Corresponding author:
Ping Sui

lndlnsd@163.com

Author Affiliation:
The First Affiliated Hospital of Dalian Medical University

Support: **20180550693.**

Review Stage at time of this submission: **Preliminary searches.**

Conflicts of interest:
None.

Diagnostic accuracy of ultrasound superb microvascular imaging for focal liver lessions: A protocol for systematic review and meta-analysis

Sui, P[1]; Sun, L[2]; Wang, H[3].

Review question / Objective: **SMI is a novel Doppler technique developed by Toshiba Medical System (Tokyo, Japan), which was designed to simulate CEUS by using advanced clutter elimination to obtain only vascular flow signals without using any contrast agents. Similar to color Doppler and power Doppler imaging, SMI can provide a real-time examination of vascularity in FLLs, but it has the additional advantages of detecting slower blood flow and revealing micro-vessels.**
Condition being studied: **Previous studies showed that SMI can detect tumor neovascularization to differentiate benign from malignant focal liver lessions (FLLs). However, the results of these studies have been contradictory with low sample sizes. This meta-analysis tested the hypothesis that SMI is accurate in distinguishing benign and malignant FLLs.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 15 December 2020 and was last updated on 15 December 2020 (registration number INPLASY2020120081).

INTRODUCTION

Review question / Objective: **SMI is a novel Doppler technique developed by Toshiba Medical System (Tokyo, Japan), which was designed to simulate CEUS by using advanced clutter elimination to obtain only vascular flow signals without using any contrast agents. Similar to color Doppler and power Doppler imaging, SMI can provide a real-time examination of vascularity in FLLs, but it has the additional advantages of detecting slower blood flow and revealing micro-vessels.**

Condition being studied: **Previous studies showed that SMI can detect tumor neovascularization to differentiate benign**

from malignant focal liver lessions (FLLs). However, the results of these studies have been contradictory with low sample sizes. This meta-analysis tested the hypothesis that SMI is accurate in distinguishing benign and malignant FLLs.

METHODS

Participant or population: The patients should be those who had undergone FLLs.

Intervention: SMI.

Comparator: Pathology.

Study designs to be included: This study will only include high quality clinical cohort or case control studies.

Eligibility criteria: 2.1. Eligibility criteria 2.1.1. Type of study. This study will only include high quality clinical cohort or case control studies. 2.1.2. Type of patients. The patients should be those who had undergone FLLs. 2.1.3. Intervention and comparison. This study compare SMI with pathology for diagnosing FLLs. 2.1.4. Type of outcomes. The primary outcomes include sensitivity, specifificity, positive and negative likelihood ratio, diagnostic odds ratio, and the area under the curve of the summary receiver operating characteristic.

Information sources: PubMed, Web of Science, Cochrane Library, and Chinese biomedical databases will be searched from their inceptions to the November 30, 2020, without language restrictions.

Main outcome(s): The primary outcomes include sensitivity, specificity, positive and negative likelihood ratio, diagnostic odds ratio, and the area under the curve of the summary receiver operating characteristic.

Quality assessment / Risk of bias analysis: Methodological quality was independently assessed by 2 researchers based on the quality assessment of studies of diagnostic accuracy studies (QUADAS) tool.

Strategy of data synthesis: The STATA version 14.0 (Stata Corp, College Station, TX, USA) and Meta-Disc version 1.4 (Universidad Complutense, Madrid, Spain) softwares were used for meta-analysis. We calculated the pooled summary statistics for sensitivity, specifificity, positive and negative likelihood ratio, and diagnostic odds ratio with their 95% confidence intervals. The summary receiver operating characteristic curve and corresponding area under the curve were obtained. The threshold effect was assessed using Spearman correlation coeffificients. The Cochrans Q-statistic and I test were used to evaluate potential heterogeneity between studies. If significant heterogeneity was detected (Q test P 50%), a random effects model or fixed effects model was used.

Subgroup analysis: We also performed subgroup and meta-regression analyses to investigate potential sources of heterogeneity.

Sensibility analysis: To evaluate the influence of single studies on the overall estimate, a sensitivity analysis was performed.

Country(ies) involved: China.

Keywords: focal liver lessions, meta-analysis, superb microvascular imaging.

Contributions of each author:
Author 1 - Ping Sui.
Email: 1558397201@qq.com
Author 2 - Lipeng Sun.
Email: Sunlp@163.com
Author 3 - Hui Wang.
Email: lndlnsd@163.com