INPLASY PROTOCOL

Corresponding author:
Jingjing Luo

luojingjing00123@163.com

Author Affiliation:
Ultrasonic Imaging Department, Affiliated Cancer Hospital & Institute of Guangzhou Medical University.

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None declared.

The accuracy in the diagnosis of breast tumors: systematic review and meta-analysis

Luo, JJ[1]; Li, T[2].

Review question / Objective: **Meta-analysis of accuracy comparison between shear wave elastography and superb microvascular imaging in the diagnosis of breast tumors.**
Condition being studied: **Breast cancer is one of serious diseases threatening people's health. Early detection and diagnosis will be helpful to reduce mortality and improve prognosis. Shear wave elastography and superb microvascular imaging are 2 new ultrasonic technologies which have developed rapidly in recent years. Superb Microvascular Imaging yields more detailed vascular information in the bloodstream in benign and malignant breast masses compared with conventional ultrasonography. Shear wave elastography provides standardized quantified results in assessing tissue stiffness. We aim to compare the accuracy of the 2 technologies in the diagnosis of breast tumors, and provide a reference for clinical decision making.**

INTRODUCTION

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METHODS

Participant or population: Patients with breast tumors.

Intervention: Shear wave elastography and superb microvascular imaging.

Comparator: Not applicable.

Study designs to be included: RCTs.

Eligibility criteria: Inclusion: (1) all patients underwent both shear wave elastography and superb microvascular imaging;(2) Chinese and English literature; (3) all breast lesions were histologically confirmed; and (4) published data in the fourfold (2×2) tables must be adequate.

Information sources: We will search comprehensive databases, including PubMed, Web of Science, China National Knowledge Infrastructure and Wan-Fang Database. The final search included articles published in Feb. 2023.The language is limited in English and Chinese.

Main outcome(s): The primary outcomes included sensitivity, specificity, diagnostic odds ratio, and area under the summary recipient's performance characteristic curve.

Quality assessment / Risk of bias analysis: The Deeks publication bias test for this study was carried out by selecting Stata 16.0, and the input command was: MIDAS TP FP Fn Tn, publication bias. Quadas (Quality Assessment of Diagnostic Accuracy Studies) tool developed by Whiting to evaluate the Quality of Diagnostic tests was used to evaluate the methodological Quality of the included Studies.

Strategy of data synthesis: The pooled data, including sensitivity, specificity, positive and negative likelihood ratios, and diagnostic odds ratio with corresponding 95% confidence intervals will be evaluated to assess diagnostic performance. Forthermore, Spearman correlation analysis will be used to assess the threshold effect and $P < 0.05$ indicates a significant threshold effect. The statistical analyses will be performed using Stata 16.0 software.

Subgroup analysis: According to different country, study design, ultrasonic diagnostic apparatus, average size, average age and measurement indicator, they were divided into different subgroups.

Sensitivity analysis: The Q test and inconsistency index will be statistic will be used to evaluate the heterogeneity of sensitivity and specificity among the studies. X^2 test and an I^2 value larger than 50% will be considered significant for heterogeneity. When heterogeneity existed, a random-effect model will be used for the meta-analysis, otherwise the fixed effect model will be applied. Meta-regression and subgroup analysis will be conducted to explore the potential source of heterogeneity. We conducted Beggs funnel plots to investigate publication bias. The statistical analyses will be performed using Stata 16.0 software.

Country(ies) involved: China.

Keywords: breast neoplasms; shear wave elastography; super microvascular imaging; diagnosis.

Contributions of each author:
Author 1 - Jingjing Luo.
Email: luojingjing00123@163.com
Author 2 - Tao LI.
Email: litaomouse@163.com