Assessing the Clinical Utility of Pelvic MRI for Lateral Lymph Node Metastases Detection in Rectal Cancer: A Meta-Analysis

Abstract ID: 133071

Program Number: P273

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Background

Rectal cancer is a major global health challenge, with the spread of cancer to lateral lymph nodes significantly impacting treatment strategies and patient outcomes. Pelvic Magnetic Resonance Imaging (MRI) has emerged as a promising non-invasive tool for detecting these metastases. However, there are varying reports on the diagnostic accuracy of pelvic MRI, highlighting the need for a comprehensive assessment of its clinical effectiveness.

Objective

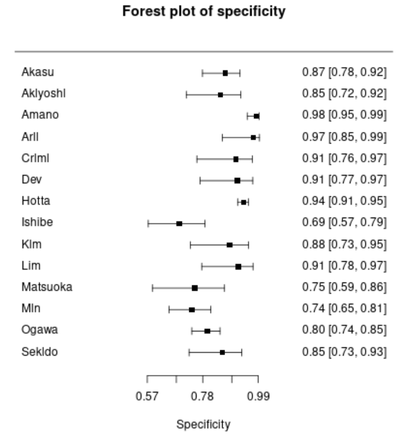
This study aims to evaluate pelvic MRI's effectiveness in identifying lateral lymph node metastases in rectal cancer patients. To achieve this, we will perform a systematic literature review and a meta-analysis of diagnostic accuracy, using histopathology as the benchmark for comparison.

Methods

A comprehensive search was conducted across PubMed, Embase, and the Cochrane Library for publications up to 2023 that examined the accuracy of pelvic MRI in detecting lateral lymph node metastases in rectal cancer, using histopathological analysis as the gold standard. We utilized the R mada package for statistical analysis, which allowed for the integration of sensitivity, specificity, and false-positive rates from various studies while considering variations within and between these studies.

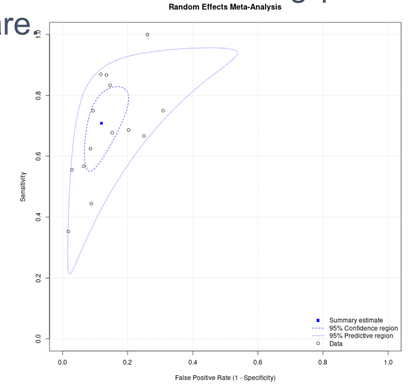
Results

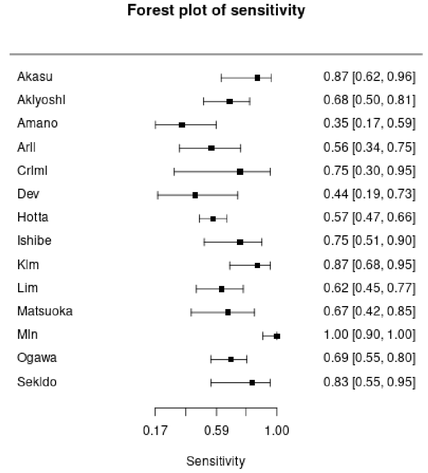
Our analysis included 14 studies comprising 1911 samples. The combined sensitivity, specificity, and false-positive rate for pelvic MRI in detecting lateral lymph node metastases were found to be 70.9% (97.5% Confidence Interval [CI]: 60-79.8%), 88.1% (97.5% CI: 82.6-92.0%), and 11.9% (97.5% CI: 8.0-17.4%), respectively.



Conclusion

This study suggests that pelvic MRI accurately detects lateral lymph node metastases in rectal cancer. These results advocate for the integration of pelvic MRI in clinical decision-making for rectal cancer patients. However, the variability in study results underscores the need for more extensive, prospective research to confirm these findings and develop standardized imaging protocols for enhancing patient care.





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Conflict of interest

No conflict of interest to declare.

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