

Diagnostic Performance of Spurling’s Test for the Assessment Cervical Radiculopathy: A Systematic Review and Meta-Analysis

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ADMINISTRATIVE INFORMATION

Support - Taiwan Society of Ultrasound in Medicine.

Review Stage at time of this submission - Completed but not published.

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 26 October 2024 and was last updated on 26 October 2024.

INTRODUCTION

Review question / Objective To investigate the diagnostic performance of Spurling’s test for cervical radiculopathy.

Rationale Cervical radiculopathy results from nerve root compression, irritation, or lesions, often caused by herniated discs, foraminal narrowing, or degenerative changes, leading to pain, numbness, and weakness in the upper extremities. Diagnostic imaging and electro-diagnostic tests confirm cervical radiculopathy, though Spurling’s test serves as a useful screening tool by provoking symptoms through head tilting and neck compression. Despite studies indicating Spurling’s test has high specificity but variable sensitivity, this meta-analysis aims to evaluate its diagnostic validity for cervical radiculopathy.

Condition being studied Therefore, we would like to perform The PICO (population, intervention, comparison, outcome) setting of the current meta-

analysis included: (1) P: human participants; (2) I: examination using Spurling’s test; (3) C: myelography, computed tomography, magnetic resonance imaging, or electrophysiological studies; and (4) O: diagnostic performance of Spurling’s test.

METHODS

Search strategy Two authors made independent electronic searches in the PubMed, Cochrane library, and ClinicalTrials.gov with keyword of ("foraminal compression test" OR " Spurling’s test" OR "Spurling maneuver") AND ("cervical radiculopathy" OR "cervical nerve root compression" OR "cervical nerve root impingement" OR "cervical nerve root irritation") through the earliest record to October 2024.

Participant or population Patients with cervical radiculopathy.

Intervention Spurling’s test.

Comparator Reference test.

Study designs to be included Cohort, cross-sectional and case control studies.

Eligibility criteria (1) participants aged 18 and older; (2) Spurling's test as the index test; (3) reference standards including myelogram, computed tomography, magnetic resonance imaging, electromyography, nerve conduction studies, or surgical findings; and (4) cross-sectional or cohort studies with prospective or retrospective data on Spurling's test for diagnosing cervical radiculopathy.

Information sources PubMed, Cochrane library, ClinicalTrials.gov and other relevant references.

Main outcome(s) Sensitivity, specificity, likelihood ratio and diagnostic odds ratio.

Quality assessment / Risk of bias analysis Two independent authors assessed the quality of the included studies using the QUADAS-2 tool, which evaluates four key areas: (1) patient selection, (2) index test, (3) reference standard, and (4) flow and timing of the primary studies in the meta-analysis.

Strategy of data synthesis The diagnostic performance of Spurling's test was evaluated by the average sensitivity, specificity, positive/negative likelihood ratio, and diagnostic odds ratio using a bivariate random-effects model. The variability of the target parameters across the included studies was determined using I^2 , which denotes the proportion of variation across studies that is caused by heterogeneity rather than chance.

Subgroup analysis Subgroup analyses were performed based on the type of Spurling's test (with or without additional cervical extension or rotation) and reference test (diagnostic imaging or electrodiagnostic testing).

Sensitivity analysis Not applicable.

Language restriction No language limitation.

Country(ies) involved Taiwan.

Keywords cervical radiculopathy, physical examination, diagnostic test, sensitivity, specificity.

Contributions of each author

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