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StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020 Jan-.

Spurling Test

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Last Update: September 3, 2020.

Introduction

Neck pain affects approximately 10% of the adult population at any given time. This means that primary care providers and other specialists will frequently see patients with this complaint in the office. In modern medicine, these cases are often immediately sent for imaging. Although Magnetic Resonance Imaging (MRI) is considered the test of choice for cervical pathology, it is contraindicated in some patients with implants and can also be cost prohibitive. Computed Tomography (CT) scans can also be used and are less expensive, but should be used with caution as they can expose patients to unnecessary doses of radiation. Even in the era of high-quality imaging studies, a history and physical examination remain the cornerstone of the profession, and should never be discounted.[1][2][3]

A variety of unique physical exam tests can be utilized to help determine the source of pathology and the need for additional imaging. These include provocative tests that are frequently utilized in the evaluation of cervical radiculopathy. The Spurling test is one of the best-known and most widely used provocative tests for the assessment of the cervical spine.

The Spurling test was originally named as Spurling's neck compression test by the neurosurgeons Roy Glen Spurling and William Beecher Scoville. It was proposed in 1944 for use in the evaluation of "radiculitis." The test has also been referred to as the Foraminal Compression Test, Neck Compression Test, or Quadrant Test. The Spurling test is considered a provocative test used in the spinal examination. In several previous trials (mostly conducted in the late 1900's), the test had proven to have high specificity, but low sensitivity. A more recent study showed more promising accuracy with a sensitivity of 95% with a specificity of 94%. This trial, however, only included patients who were presenting with symptoms of unilateral cervical radiculopathy lasting for at least four weeks. This resulted in the indirect exclusion of many of the alternative diagnoses that the Spurling test is used to help differentiate, and eliminated many other confounding variables. In short, while studies show conflicting data, the current consensus remains that the Spurling test is highly specific with only mild-to-moderate overall sensitivity.

Because of its relatively low sensitivity, the Spurling test should not be used as the only screening tool. It is best used combined with other specialized examination tests (some of which are mentioned below) to increase overall screening sensitivity, and should always be accompanied by thorough patient history.[4][5]

Procedures

The Spurling test, as it was originally described, was performed by passive lateral flexion and compression of the head, though this is no longer considered the proper technique. The test is most commonly defined in the current literature as the passive cervical extension with rotation to the affected side and axial compression. The test is considered positive when radicular pain is reproduced (pain radiates to the shoulder or upper extremity ipsilateral to the direction of head rotation).[6][7]

The Spurling Test is designed to reproduce symptoms by compression of the affected nerve root. The cervical extension is used to induce/reproduce posterior bulging of the intervertebral disk. Rotation of the head causes narrowing of the neuroforamina in the cervical spine. Finally, axial compression is applied to amplify these effects with the aim of exaggerating the preexisting nerve root compression.

Provocative Tests in a Spinal Examination

Shoulder Abduction (Relief) sign: Active abduction of symptomatic arm achieved by patient placing their ipsilateral hand on their head. A positive test results in relief (or reduction) of cervical radicular symptoms.

Neck Distraction test: Active distractive force is applied by examiner while grasping patient's head under the occiput and chin. A positive test results in relief (or reduction) of cervical radicular symptoms.

L'hermitte's sign: Examiner passively flexes patient's cervical spine. A positive test result is an electric shock-like sensation down spine or extremities.

Hoffman's sign: Passive snapping flexion of distal phalanx of patient's middle finger. A positive test results in flexion-adduction of ipsilateral thumb and index finger.

Adson's test: Patient is instructed to inspire with chin elevated, and head rotated to the affected side. A positive test results in obliteration of radial pulse.

Indications

The Spurling test should be performed in the assessment of a patient with symptoms of cervical radiculopathy to help determine the patient's pathology and whether further imaging studies are indicated or alternative tests or diagnoses should be considered.

The Spurling test should be avoided in patients suspected of having cervical instability, such as those with cervical spondylotic myelopathy, infectious process, or malignancy (most commonly metastatic). It should also not be performed in an acute trauma setting.

Potential Diagnosis

With a positive Spurling Test, the suspected diagnosis is a cervical nerve root compression commonly related to intervertebral disc pathology (e.g., herniation).

The differential diagnoses of cervical radiculopathy include entrapment neuropathy (most commonly of the median or ulnar nerve), complex regional pain syndrome, brachial plexus lesions, cervical spondylotic myelopathy. It may also be present as a sequela of malignancy (primary or metastatic) or infection (meningitis).

Normal and Critical Findings

A negative test is one in which the pain elicited is localized to the neck, or when no symptoms can be reproduced. Muscle spasms and neck stiffness are common to many cervical injuries and are non-specific findings that are routinely encountered, and do not constitute a positive test.

The result of a positive Spurling test is a reproduction of cervical radiculopathy symptoms. Cervical radiculopathy can involve the neck, shoulder, or arm. It may also present as muscle weakness, sensory symptoms, or diminished deep tendon reflexes. Any, or all, of these symptoms, may be present in a patient, and any of them may be elicited in response to provocative testing.

Passive cervical flexion resulting in electric shock-like paresthesia (L'hermitte's sign) is considered a critical finding. This may indicate multiple sclerosis plaques or other intramedullary pathology.

Patient Safety and Education

Caution is advised in patients with suspected cervical spine instability, and provocative testing should be avoided in such patients. Common causes of cervical instability include acute trauma, rheumatoid arthritis, cervical malformations, and metastatic disease.

Clinical Significance

The Spurling test is a well-recognized provocative test that is routinely used in the evaluation of neck pain and cervical radiculopathy. If used appropriately in conjunction with other history and exam findings, the Spurling test can help determine the cause of cervical radiculopathy and guide further workup and imaging studies. However, despite its clinical importance in the evaluation of cervical pathology, the test does have a relatively low sensitivity; therefore, it should not be the only criterion to determine whether further workup is indicated.

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Bookshelf ID: NBK493152 PMID: 29630204