



ELSEVIER

Contents lists available at ScienceDirect

Journal of Hand Therapy

journal homepage: www.jhandtherapy.org

JHT READ FOR CREDIT ARTICLE #366.

Scientific/Clinical Article

The diagnostic accuracy of five tests for diagnosing partial-thickness tears of the supraspinatus tendon: A cohort study



Jorge H. Villafañe PhD, MSc, PT^{a,*}, Kristin Valdes OTD, OT, CHT^b, Fabio Anselmi PT^{a,b,c,d}, Caterina Pirali MD^c, Stefano Negrini MD^{a,d}

^a IRCCS Don Gnocchi Foundation, Milan, Italy^b Drexel University, PA, USA^c Department of Medical and Surgical Sciences, University of Brescia, Brescia, Italy^d Department of Clinical and Experimental Sciences, University of Brescia, Italy

ARTICLE INFO

Article history:

Received 12 July 2014

Received in revised form

14 January 2015

Accepted 30 January 2015

Available online 19 February 2015

Keywords:

Physical examination

Shoulder

Validity of results

Tendon

ABSTRACT

Study design: A cohort study.*Introduction:* The causes of the pain can be difficult for clinicians to diagnose due to the complexity of the shoulder anatomy and the wide spectrum of shoulder conditions.*Purpose of the study:* The aim of this study was to investigate the clinical usefulness of provocative diagnostic tests, in patients with partial-thickness tears of the supraspinatus (SST) tendon.*Methods:* The partial-thickness tears SST tendon group consisted of 50 patients and 50 subjects with shoulder pain. Sensitivity, specificity, positive and negative predictive values, and likelihood ratios of five physical examination tests were calculated using a 2 × 2 table.*Results:* All the tests exhibited clinical useful positive LR greater than 2 (all, >7.0). The Yocum, Jobe, and Hawkins-Kennedy exhibited clinically useful negative LR of less than 0.5.*Conclusions:* The provocative tests examined were clinically useful in determining the presence or absence of pathology of the supraspinatus tendon.*Level of evidence:* 2b.

© 2015 Hanley & Belfus, an imprint of Elsevier Inc. All rights reserved.

Introduction

Shoulder pain can limit an individual's ability to reach into a kitchen cabinet, wash their back, and interfere with sleep. One third of all individuals seeking physician intervention for musculoskeletal pain in the United States are seeking relief for shoulder pain.¹ The causes of the pain can be difficult for clinicians to diagnose due to the complexity of the shoulder anatomy and the wide spectrum of shoulder conditions. These conditions can be caused from soft tissue injury or degenerative changes of the bone structures. There are several diagnostic tests that can be used to help the clinician discover the underlying cause of shoulder pain including magnetic resonance imaging (MRI), magnetic resonance arthrography (MRA), ultrasonography, arthroscopy, and provocative tests. These tests vary in cost-effectiveness and accuracy. Physical examination tests can be the most cost-effective of the diagnostic tests but the evidence regarding the accuracy of the tests varies and

many of the studies present in the literature, have not reported likelihood ratios that can help the clinician understand the usefulness of the test.

Michener et al examined the diagnostic accuracy of the Neer, Hawkins–Kennedy, painful arc, empty can (Jobe), and external rotation resistance tests for subacromial impingement (SAIS).² They concluded that the single tests of painful arc, external rotation resistance, and Neer are useful screening tests to rule out SAIS. The single tests of painful arc, external rotation resistance, and empty can are helpful to confirm SAIS.² Naredo et al compared physical examination of the shoulder with ultrasonographic findings and found low accuracy of the clinical tests for a variety of periarticular shoulder lesions and concluded that ultrasonography should be used whenever possible to improve diagnosis and treatment of the painful shoulder.³

Three systematic reviews that examined the effectiveness of diagnostic tests for the assessment of shoulder pain due to soft tissue disorders cited the need for large, well-designed, prospective studies of the diagnosis of shoulder pain.^{4–6}

One systematic review reported that accuracy of diagnostic tests for the detection of partial-thickness rotator cuff tears

* Corresponding author. Regione Generala 11/16, Piosasco 10045, Italy. Tel.: +39 011 9065495, +39 339 5857563; fax: +39 011 9065495.

E-mail address: mail@villafane.it (J.H. Villafañe).

demonstrated low-pooled sensitivity estimates.⁴ The other systematic reviews reported that there were some promising tests but their properties must be confirmed in more than one study.^{5,6}

Although diagnostic tests are used frequently for clinical evaluation, there is limited data on their diagnostic accuracy. The Neer, Hawkins–Kennedy, Yocum tests were tested because they impinge or “pinch” the supraspinatus tendon and can be useful to determine the irritability of the tendon and early supraspinatus tendon pathology. The Jobe and Patte tests were chosen to challenge the strength of the supraspinatus muscle and the integrity of the rotator cuff.

Our primary aim was to investigate the diagnostic accuracy of the Neer, Hawkins–Kennedy, Yocum, Jobe, Patte, and compare the accuracy between tests for partial-thickness tears supraspinatus (SST) tendon. The secondary aim was to combine the performance of provocative tests to determine if it was possible to improve the diagnostic value of the physical examination. We evaluated sensitivity, specificity, accuracy, positive and negative predictive values, and the likelihood ratios of the clinical diagnostic tests for partial-thickness tears SST tendon.

Methods

Study design

We conducted a prospective cohort (male and female subjects aged 37 to 80 with diagnosis of unilateral shoulder pain) study. Informed consent was obtained from all participants and procedures were conducted according to the Declaration of Helsinki. The protocol was approved by the Ethical Committee in IRCCS Don Gnocchi Foundation, Milan, Italy.

Subjects

Consecutive patients that were referred to physical therapy by a family practice physician to the outpatient department at orthopedic rehabilitation facility with a complaint of shoulder pain were screened and enrolled the study during the calendar year 2013. The one hundred subjects (48 men and 52 women, aged 37–80 years) were recruited based on the presenting symptoms of shoulder pain. This group consisted of 50 patients (mean \pm SD: 52 \pm 11 yrs) suffering from partial-thickness tears of the SST tendon and 50 subjects with shoulder pain with a variety of shoulder conditions including tendinitis, shoulder adhesive capsulitis, and non-specific shoulder pain (mean \pm SD of 51 \pm 11 yrs) (Table 1). All subjects were right-hand dominant and presented with unilateral shoulder pain. Data collection was planned before the physical tests and MRI were performed (Fig. 1). The SST partial tear was diagnosed according to the gold referenced standard⁷ of diagnosing a tear, a magnetic resonance Imaging (MRI) by a radiologist three days prior to the physical examination by the physical therapist and the subjects were classified as having partial-thickness tears SST tendon. MRI of

Table 1
Baseline demographics for both groups^a

	Shoulder pain	Partial thickness SST
Age	51 \pm 11	52 \pm 11
Gender	25 men 25 women	23 men 27 women
Working	100%	100%
MRI findings		
Partial Thickness SST	n = 0	n = 50
Tendinitis	n = 35	n = 0
Shoulder adhesive capsulitis	n = 10	n = 0
Unspecified shoulder pain	n = 5	n = 0

^a Data are expressed as means \pm standard deviations (SD).

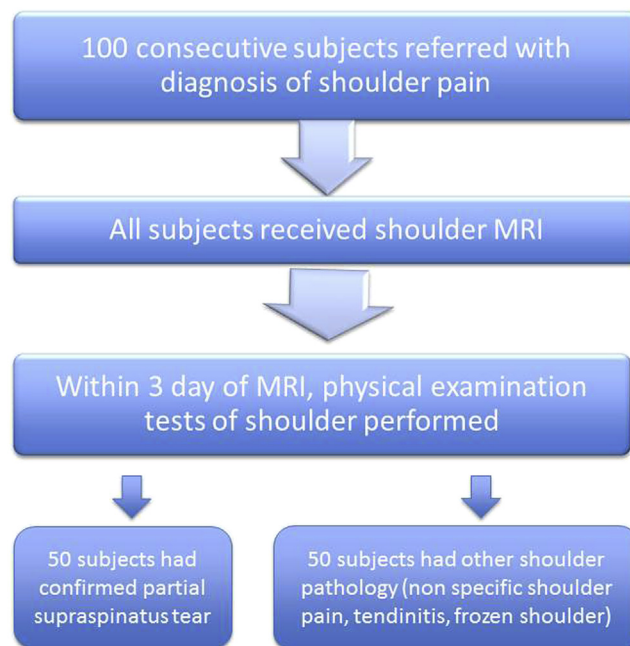


Fig. 1. Flow of participants.

the shoulder region of all patients were performed and evaluated by a radiologist who had experience with the skeletal system, especially shoulder imaging. The radiologist was blinded to the results of the PT examination.

Subjects between the ages 18 and 70 were included in the study. Subjects, having any of the following disorders were excluded: rheumatic inflammatory or systemic diseases, acute traumatic conditions, postoperative conditions and neck and elbow disorders. We also excluded patients that did not sign the informed consent. Details were recorded about the patients' ages, sex, occupation, and characteristics of pain and additional problems. Detailed physical examination was performed. All patients were clinically stable and they all underwent subjective and objective physical examination performed by two physical therapists that had 1–7 years of experience in management of shoulder conditions. Patients were asked not to take analgesics, muscle relaxants, or anti-inflammatory drugs for 24 h prior to the examination.

Outcome measures

Physical examination (Fig. 2)

Before the start of the study, the clinicians underwent training to standardize technique and interpretation of the tests. Each clinician independently performed a standardized history and physical examination and was blinded to the results of the MRI study.

First, active and passive ranges of motion of the shoulder of all of the subjects were evaluated. When measuring active abduction, the patient was asked to bring his arm up as high as possible and they were asked if they had any painful symptoms. For passive abduction, the examiner pushed the patient's arm up as high as possible and noted whether full passive abduction was obtainable, if it elicited pain, and if the active and passive abduction range of motion (ROM) measurements corresponded. In addition, the physical examination included seven clinical tests. All these tests were performed with the patient standing and in an established order following a standard procedure. No adverse events occurred during the testing procedures.

Download English Version:

<https://daneshyari.com/en/article/2694907>

Download Persian Version:

<https://daneshyari.com/article/2694907>

[Daneshyari.com](https://daneshyari.com)