

clinical conduit



So how can I tell if there is a tear in the rotator cuff?

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Rotator cuff tears are a common source of shoulder pain and account for a large percentage of adult shoulder injuries seen in rehabilitation centers. Murrell, et al conducted an interesting study that was published in *The Lancet* in 2001. First they reported on the prevalence of the injury and demonstrated that the likelihood of shoulder pain as the result of a rotator cuff tear increases with age. As you can see in the chart

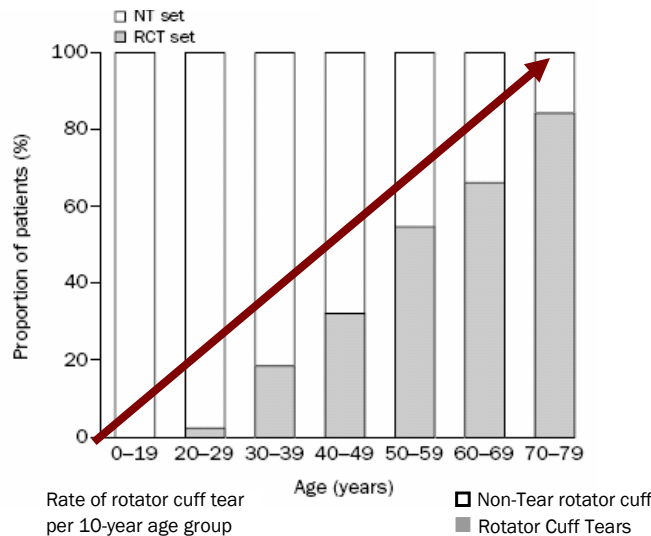
below the proportion of patients with shoulder pain as the result of a torn rotator cuff rises with each passing decade.

Murrell's study went on to see what physical signs were most predicative of a torn rotator cuff. Their findings were quite interesting. Patients who present with shoulder pain, and who test positive for supraspinatus

weakness, weakness in external rotation, and a positive impingement sign have a 98% chance of a rotator cuff tear. Furthermore, if they test positive for any two of these clinical findings and aged 60 or older, they still have a 98% chance of a rotator cuff tear. If only one of the clinical tests was positive, the clinical result were indeterminate and imaging was indicated. If none of these tests are positive the chance of having a torn rotator cuff fell to only 5% and for practical purposes eliminated the diagnosis as the source of shoulder pain.

Pretty amazing that three simple tests, that we can all perform, have the same predicitive power as MRI or ultrasonography. Makes you wonder how accurate the results of this study actually are. I found another study that also indicates that cluster tests like this have the promised predictive capacity that Murrell suggests.

continued on page 2



2006 Schedule

Cervical Course

Mar 18-19 Athens, GA

Pilates Course

May 20-21 Chicago, IL

Shoulder Course

Mar 4-5 Salina, KS
Mar 11-12 Grapevine, TX
Apr 1-2 Chicago, IL

Knee Course

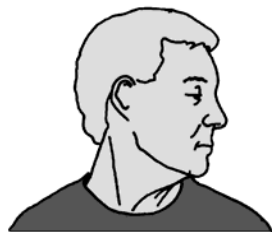
Apr 22-23 Lawton, OK
Jun 10-11 Grapevine, TX
Jun 24-25 Chicago, IL
Jul 15-16 Baltimore, MD

Lumbopelvic Course

Apr 29-30 Plano, TX
Jul 15-16 Chicago, IL

The remaining schedule for 2006 (August - November) is available at our web site — www.continuing.ed.cc and will also be published in upcoming newsletter issues.

Recognizing Vertebrobasilar Insufficiency



Screening patients for potentially serious medical conditions is an essential component of the intial examination. Cervicothoracic patients that present with a complaint of neck pain, visual disturbances, and/or vertigo can be difficult to treat because of the wide variety of peripheral or central causes. Among the potential differential diangoses would be vertebrobasilar insufficiency (VBI) that could be responsible for the chief complaint. The vertebral arteries provide the posterior circulation to the brain and are vital to brainstem function.

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Rotator Cuff Tear Recognition continued ...

References

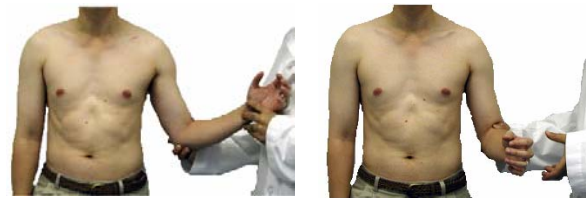
Murrell G, Walton JR. Diagnosis of rotator cuff tears. *The Lancet*. 2001; 357:769-770.

Park HB, et al. Diagnostic accuracy of clinical tests for different degrees of SA impingement syndrome. *J Bone Joint Surg Am*. 2005; 87(7):1446-55.

McCabe RA, et al. The effect of RC tear size on shoulder strength and ROM. *J Orthop Sports Phys Ther*. 2005; 35:130-135.

Hertel R. Lag signs in the diagnosis of RC rupture. *J Shoulder Elbow Surg*. 1996; 5(4):307-313.

In a 2005 study by Park, et al, they found that the cluster findings of the presence of a painful arc, a positive drop arm sign, and weakness in external rotation yield a 91% post-test probability for the existence of a rotator cuff tear. Many other studies have also shown the high specificity (accurately rules in a diagnosis) of a drop arm sign. Finally, studies by Hertel, et al have shown the predictive value of external rotation lag signs. The test for this sign is performed with the arm supported in 20° of elevation and near end range external rotation. If the patient cannot actively hold this position and the arm falls slightly into internal rotation it indicates a tear of the rotator cuff. This test may have less value in those patients with arthritis or significant stiffness. Hertel also describes an external rotation lag sign performed in 90° of abduction. Weakness (unable to actively hold the position) is an indicator of a rotator cuff tear involving both the supra and infraspinatus.

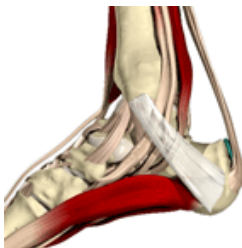


External Rotation Lag Sign

A final study of interest was published by McCabe, et al, in the *Journal of Orthopedic and Sports Physical Therapy*. This study indicated that weakness in a unique testing position was able to distinguish rather well between “small” and “large” tears. Strength deficits of greater than 50% as measured by a hand-held dynamometer in 10° of abduction were able to distinguish the size of the tear. Other physical findings such as ROM and function could not make this distinction. The authors hypothesized that this position may have isolated the strength deficit without the significant confounding variable of pain. I would highly recommend further review of these studies to increase your comfort in recognizing patients with a torn cuff. Suffice to say, age and anti-gravity weakness should heighten your suspicion.

“I have a friend whose orthopedist said she has tarsal tunnel syndrome and should consider a surgical resolution. Her job requires her to be on her feet all day long and I was wondering if physical therapy or an orthotic evaluation would be of any pre- or post-operative benefit?”

D.S., PT - Dallas, TX



Question of the Month



As you know tarsal tunnel syndrome is an entrapment neuropathy of the posterior tibial nerve. It is typically caused by compression from the flexor retinaculum and magnified if there is space occupying lesion in the tunnel such as a ganglion cyst or tumor. Some use percussion to identify the problem (Tinel's) but I've found the most provocative maneuver is maximal simultaneous dorsiflexion of the ankle, eversion of the subtalar joint, and extension of the MTPs for 5-10 seconds. Typical symptoms are pain, burning, tingling, or numbness just posterior to the medial malleolus that may extend into the medial arch and heel. If chronic, there may be evidence of motor and sensory change in the medial three toes. I think

everyone agrees that a conservative approach should be the initial intervention and is helpful in most cases. My focus would be on correcting or alleviating the mechanical cause. The most common precipitating factor is prolonged or excessive pronation in mid-stance secondary to a structural varus abnormality in the rearfoot or forefoot with resultant hyperpronation that reproduces the provocative position mentioned previously. Consequently, I think the most important intervention is a custom orthosis to minimize compensatory gait mechanisms. It is also possible the hyperpronation is not a structural compensation but secondary to weakness in the posterior tib, tight gastroc-soleus, or proximal hip weak-

ness, I have not found a specific physical agent or electrotherapeutic modality to be of consistent benefit other than as a possible temporary or placebo value. Reports on post-op outcomes are somewhat conflicting in the literature ranging from a 96% significant improvement and 90% resolution of symptoms in one study to only a 51% subjective decrease in symptoms in another. In my limited experience with these post-op patients I have noticed that those who do best had symptoms for less than a year and the offending source was a space occupying lesion as opposed to those that had an idiopathic (due to abnormal foot structure) or traumatic onset.

Questions you would like addressed in a future issue can be sent to mulliganpt@comcast.net



Vertebrobasilar Insufficiency continued -

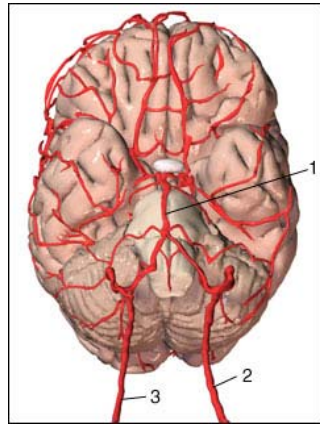


Figure 1:

- 1 – Basilar Artery
- 2/3 – Vertebral Arteries

from www.healthopedia.com

Many screening tests have been described in the literature to reproduce the potential signs or symptoms of VBI in a safe and controlled manner. If central neurological signs or symptoms are reproduced with the provocative

maneuvers; immediate referral to a physician for further evaluation is warranted. This would also then make for an obvious contraindication for cervical manual therapy.

Classic signs and symptoms for VBI include nausea, vertigo and syncope, nystagmus, blurred vision, or disturbances with speech, balance, and hearing.

The common cervical postures used to stress vertebral blood flow and collateralization include extension, rotation, combined extension and rotation and adding traction to the combined positions. Some therapists advocate the deKleyn's position which combines extension and rotation with the head of the end of the treatment plinth. Achieving full available motion is important and the test positions should be held 10-30 seconds while conversing with the patient.

A recent study published in *Manual Therapy* by Arnold, et al concluded that the greatest mechanical stress to the contralateral vertebral artery was produced in neutral rotation and in a "pre-manipulative hold" positions.

VBI is generally considered to be a rare but unpredictable condition. Developing a consistent approach to screen for inadequate vertebral blood flow will assist the clinician in making sound decisions regarding appropriate intervention without exposing the patient to potentially serious consequences.

I would highly recommend Magee's chapter on cervical spine examination as an excellent overview for the variety of commonly conducted tests for vascular competency of the vertebral arteries.

David J. Magee. *Orthopedic Physical Assessment*, 4th Ed. Saunders, 2002. Chapter 3; pgs. 152-156

Medicare Cap Update

If you haven't heard the Center for Medicare and Medicaid Services (CMS) released information last month describing the new exception process for beneficiaries to obtain coverage when medically necessary services are expected to exceed the \$1740 cap in effect for this year. These new rules are expected to be enacted in mid March.

The APTA has prepared a number of documents which clarifies the exception process. These documents can be retrieved from the APTA's web site and include a [Fact Sheet](#), a [Brief Summary](#) or [Detailed summary](#) of the exception process, and a "Frequently Asked Questions" sheet. Click on the hyperlinks provided to take you directly to these resources.

Medically necessary services beyond the cap can be obtained in two ways: an automatic or manual exception. The automatic exception requires no specific or additional documentation and no request is required on behalf of the beneficiary or provider. The automatic exception is designated by the use of a modifier to the claim. CMS defines the following as indicators for automatic exception:

1. Evaluation to see if additional services are required
2. Certain conditions and diagnoses (approximately 90 different ICD-9 codes representing 15% of the codes typically used by therapists)
3. Designated complexities and comorbidities that may affect the patient's status
4. Additional considerations that compound the need for care in excess of the cap

CMS has published a fact sheet that details and lists the codes and complexities that will qualify as automatic exceptions. Manual exceptions are obtained through a written request by the beneficiary or provider. To view the CMS transmittals go their website at <http://new.cms.hhs.gov/Transmittals/2006/Trans/list.asp#TopofPage>



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Rehabilitation Exercise Technique

"Knowledge speaks while wisdom listens"


continuing ED



Gear Shift Exercise

Many shoulder pathologies cause a loss of shoulder rotation. A simple home exercise that requires equipment that everyone has (a golf club, baseball bat, broom handle, etc) is called the gear shift. The patient is sitting with the involved arm at their side holding some type of stick to support the weight of the arm. The patient is then taught to move the shoulder in the appropriate arc (kind of like shift gears in the car). Flexion/extension is accomplished with sagittal plane motion or internal and external rotation is accomplished by moving in a medial to lateral direction while keeping the elbow flexed at 90°. I've found this to be a great introductory exercise with minimal activity in the cuff if early tensile stress is contraindicated. Patients perform the exercise quite effortlessly and feel like they are in control of the exercise because of the arm's weight being reduced.



Featured Home Study Program Goniometric Examination

An interesting study on the risk factors for plantar fasciitis was published in an article by Riddle, et al, in the May 2003 issue of the Journal of Bone and Joint Surgery. They found that the risk of plantar fasciitis increases as the range of talocrural joint dorsiflexion decreases. In their study, individuals who spent the majority of their work day on their feet and those whose body-mass index (BMI) was > 30 were also at elevated risk. Reduced ankle dorsiflexion, obesity, and work-related prolonged weight-bearing appear to be independent risk factors for plantar fasciitis and a reduced ankle dorsiflexion seems to be the most important of these factors.

Home Studies Now Available

Study and learn at your own pace at home!

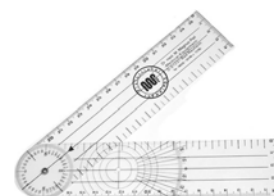
Foot-Ankle Anatomy	.3 CEUs
Achilles Tendinopathy	.2 CEUs
Lateral Ankle Instability	.2 CEUs
Foot-Ankle Surgeries	.2 CEUs
Knee Meniscal Injuries	.2 CEUs
Orthopedic Hip Injuries	.2 CEUs
Goniometric Examination	.2 CEUs
Principles of Joint Mobilization	.3 CEUs
Functional Anatomy of the Shoulder	.3 CEUs
Scapular Significance: Ortho Perspective	.2 CEUs
Proximal Humerus Fracture Rehab	.2 CEUs
Examination-Treatment of Hand/Wrist	.3 CEUs
Ethics and Professional Responsibility	.2 CEUs

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In their study they detailed a specific methodology for dorsiflexion range of motion assessment. The measurement technique standardized arm and axis placement while maintaining the subtalar joint in a neutral position. The interclass correlation coefficient very high at 0.97 (with a 95% confidence interval of 0.88 - 0.99). These excellent findings are better than those reported by Elveru, et al. In order to use this measure as a predictor of risk it is imperative that the examination technique be reliable and have minimal measurement error. While goniometry is a simple examination technique it is important to know the accuracy of the measure.

For additional information on the goniometric examination techniques and the expected reliability unique to each joint - visit our home study titled "Goniometric Examination". This study can be viewed or read free of charge. A post-test for CEU credit is available for a fee can be found at

<http://www.continuing-ed.cc/homestudy.htm>



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