SPECIAL INTEREST GROUP

CSM2017 PRECONFERENCE COURSE

The preconference course on ultrasonography of common musculoskeletal conditions, led by Doug White, was a success with attendance by approximately 35 practitioners and faculty members. The interest in ultrasound as a supplement to the clinical examination continues to grow across the country, consistent with world-wide trends.

NOMINATING COMMITTEE

Marcie Harris-Hayes has finished her term on the Nominating Committee by serving as Chairperson and facilitating the election process. Megan Poll was ultimately elected for an entry role on the committee. Marcie has served the SIG well in multiple capacities and we are all grateful for her contributions. Nancy Talbott is now the new Committee Chair. Paul Beattie also serves on the committee. Later this year, the Nominating Committee will be seeking nominations for SIG Vice President. The election will be held in November. Jim Elliott’s current term ends immediately after CSM 2018.

CSM PRESENTATIONS 2017 AND 2018

The SIG sponsored programming at CSM this year consisted of a large cast of characters presenting on imaging models and resources in educational curricula. The presenters consisted of Jim Elliott, Brian Young, Bob Boyles, Becky Rodda, Ira Gorman, and Chuck Hazle.

The proposed programming next year will accommodate the needs of local and state levels as the SIG expands its advocacy role. With imaging in physical therapist practice now beginning to gain momentum, we plan to have practitioners who have referred for imaging and facilitated the process of gaining imaging referral privileges on the institutional and state levels. These topics will include their process of achieving administrative and legislative changes to permit imaging referral privileges for physical therapists. The APTA staff will also contribute, giving updates on the vision of practice for the future and the efforts to realize that outcome.

RESEARCH COMMITTEE

The Research Committee, headed by George Beneck, continues to move forward with multiple projects relating to imaging in physical therapist practice. In particular, they intend to gather data on the evolution of imaging now becoming available in jurisdictions such as Wisconsin. A portion of this information, including cost and outcome data, may be a challenge to collect and analyze with regard to determining the impact physical therapists are having with imaging privileges.

SCHOLARSHIP COMMITTEE

The SIG will be starting a scholarship supporting attendance at CSM for accepted presentations relating to imaging. Murray Maitland is the Scholarship Committee Chairperson with several volunteers assisting as they will soon be developing procedures to allow awarding of the scholarship. More on this to come in future issues of OPTP. We will also have information about this scholarship posted on the SIG web pages of the Orthopedic Section website.

EXTERNAL PARTNERSHIPS

As of this writing, the SIG is in the process, of developing external partnerships intended to benefit these organizations as well as the SIG and APTA. On an individual level, those most interested in real time imaging are likely to be attentive to these as we continue to move forward. These are still very much in the developmental stages, but have the support of the Orthopedic Section and the APTA as these efforts continue to evolve. We will have more information about these partnerships in the coming months.

SIG WEBPAGES

The SIG web pages have recently been overhauled to allow greater visibility of the key documents linked on those pages. Principally, the “white paper” entitled Diagnostic and Procedural Imaging in Physical Therapist Practice and the Imaging Education Manual for Doctor of Physical Therapy Professional Degree Programs are now more accessible. The list of resources for imaging education has also been expanded and is also more easily accessed than in the past.

Musculoskeletal Ultrasound Evaluation of a Person with Anterior Knee Pain Following a Motor Vehicle Accident

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HISTORY

A 53-year-old male was involved in a motor vehicle accident (MVA) on 11/19/15. He attempted to self-manage his pain until 12/9/15 at which time he was seen by his primary care physician secondary to cervical, thoracic, lumbar, and bilateral knee pain on 12/9/15. Radiographs of his cervical, thoracic, and lumbar spine were performed along with an anterior view of the bilateral knees. All were reported to be negative. Percocet was prescribed to manage the pain. Over the next 6 months, the cervical, thoracic, and lumbar pain decreased significantly (2/10). His main complaint upon evaluation was left anterior knee pain. He described the intensity to be 8/10 (0-10 pain scale) with aggravating activities being going up and down stairs and playing with his children. He had a modified Cincinnati knee score of 45, which is evaluated as fair.
FINDINGS

An initial evaluation along with a musculoskeletal ultrasound (MSK US) evaluation was done on 5/3/16. Imaging was done because of the chronicity of knee pain, negative x-rays, and a closer examination of the soft tissue. The MSK US examination followed the European Society of Musculoskeletal guidelines for the knee using a linear, 12 MHz probe.\(^1\) Medial, lateral, and posterior imaging of the knee was performed and was non-remarkable. The anterior image was significant on the left knee for an enthesophyte or bony projection at the insertion of the quadriceps tendon. A mid-substance quadriceps tear was also noted (Figure 1). A normal quadriceps tendon exhibits a multi-layered, laminated appearance that corresponds to the tendon layers arising from the 4 quadriceps muscles. The top layer is the rectus femoris (RF), middle layers are the vastus lateralis (VL) and medialis oblique (VMO), and deep layer is the vastus intermedius (VI). Normal quadriceps tendons may have a laminated appearance with 4 (6%), 3 (56%) or 2 (30%) layers.\(^2\) This case demonstrated a trilaminar quadriceps tear involving the VMO and VL. The mid-substance tear demonstrated clear stumps at the VL and VMO with the RF and VI intact (Figure 1).

The patellar tendon demonstrated a good fibular pattern from the inferior pole of the patella to the tibial tuberosity. Infrapatellar bursa swelling (3.51 cm) was noted in the patella (Figure 2). The infrapatellar bursa is located between the posterior tendon surface and the tibial cortex and would not normally display any hypoechoic (dark) image.\(^3\) The hypoechoic image could have resulted from local blunt trauma from the MVA resulting in infrapatellar bursitis.

INTERVENTION

The MSK US examination brought significant psychological relief to this patient as the imaging results corresponded to the location of his pain. He spent since 11/19/15 with left anterior knee pain, negative x-rays, and a perception that his knee should be getting better. The MSK US image confirmed why he was having pain and gave him confidence to begin an exercise program.

Physical therapy intervention started with McConnell taping to the left anterior knee in an inferior medial direction. McConnell taping has been indicated for anterior knee pain and demonstrated to decrease pain.\(^4-6\) Our hypothesis is a minor change in the enthesophyte position may cause a neurophysiological response creating decreased left anterior knee pain and allowing an exercise program to begin. Therapeutic exercise is a powerful modulator of the central nervous system. Activation of the quadriceps may provide the corticospinal input essential for motor unit recruitment and activation.\(^7\) We were also concerned about prolonged inactivity to the fibers of the quadriceps tendon (RF and VI) and possible development of chronic quadriceps tendinopathy. Tendons that are not stimulated with therapeutic exercise can become more disorganized at the fiber level.\(^8\) An exercise program to prevent tendinopathy and decrease pain was targeting at the quadriceps muscles. The program began using exercises that were painfree (short arc quadriceps exercises, straight leg raises, mini-squats) and progressed challenging the quadriceps as the patient could tolerate (knee extension with resistance and squats). An exercise program was also implemented for the hamstrings and glutaeus medius (base on impairments from the initial examination).

![Figure 1. Long axis view of the quadriceps tendon (arrowheads at the left knee). Left side of screen is proximal or toward the quadriceps muscle and right side of screen is distal or the insertion of the tendon at the patella. The square box area is a hypoechoic area demonstrating a mid-substance tear with the distal part of the tear showing the enthesophyte (E) coming off the patella. The RF and VI of the tendon is still intact.](image_url)
RESULTS

After 3 weeks, the patient’s reported pain at the left anterior knee had decreased from 8/10 to 2/10. He reported being able to go up/down steps with minimal pain. He was able to perform specific exercises of mini-wall squats, elastic band lateral walk, and knee extension with TheraBand, straight leg raises, and short arc quadriceps exercises with minimal pain. His prognosis for a full recovery is excellent.

This case study demonstrates how MSK US imaging helped decrease the anxiety of a person with chronic knee pain and guided our intervention and prognosis.

REFERENCES