MSS Meeting Minutes

November 18, 2015 St John's Hospital~ Moross Ave. Detroit, Michigan

Lecturer: Dan Gill; Radiologist; Windsor Regional Medical Center; Windsor, Canada

Sponsor: Gary Harris/Mike Lee; Philips Inc.

Interesting Case Presentation: Liz Lawrence, RDMS/RVT/RDCS

Introduction: Liz Lawrence, President~Michigan Sonographers Society Liz thanked our sponsor—Gary Harris and Mike Lee of Philips Inc. Without our generous sponsors, we could not put on the quality sonography meetings that we do as a society year after year. Liz also welcomed our Guest Lecturer: Dr. Dan Gill for giving us the opportunity to learn about MSK (musculoskeletal sonography) and about specific examples and practices of MSK ultrasound during the 2010 Winter Olympics held in Vancouver. Liz also thanked everyone for attending this last meeting of the year and reminded attendees that we break for the holidays for the month of December without an MSS monthly meeting.

Sponsor Lecture: Mike Lee; Philips Inc. spoke about their new ultrasound system. The EPIQ 7 features an uncompromised level of clinical performance to meet the challenges of today's most demanding general imaging practices. Philips proprietary *n*SIGHT Imaging architecture is a revolutionary approach to forming ultrasound images. Unlike conventional systems that form the image line by line, *n*SIGHT creates images with optimal resolution down to the pixel level. *n*SIGHT Imaging incorporates a custom multi-stage precision beam former along with massive parallel processing.

This architecture captures an enormous amount of acoustic data from each transmit operation and performs digital beam reconstruction along with mathematically optimized focal processing to create real-time images with exceptional resolution and uniformity. Conventional Users must choose between frame rate and image quality. Utilizing *n*SIGHT Imaging allows user to capture more than double the frame rate without impact to image quality. xMATRIX is one of the most leading-edge, versatile ultrasound transducer technology available today. It allows the user to explore more fully and resolve more thoroughly, making exams faster and easier for both clinicians and patients. xMATRIX technology enables quick and easy volume acquisition, supports multiple interrogation capabilities, and provides views not possible with 2D imaging – and all with great image quality.

Interesting Case Presentation: Liz Lawrence presented the first US case: a 32yo female with a history of tobacco abuse presented with toe discoloration x 1 week; abdomen pain x 2 yrs and fatigue and leg pain. This patient was scanned at another facility recently with no clear diagnosis prior to presenting to Liz's site. Liz performed both segmental arterial US and ABI imaging of the patient's legs. At that time, Liz continued to interrogate up to the abdominal aorta based on her findings of the patient's lower extremity arterial system. Buergers Disease (thromboangitis obliterans) is a rare disease of the arteries and veins in the arms and legs. In Buerger's disease; the blood vessels become inflamed, swell and can become blocked with blood clots (thrombi). This eventually damages or destroys skin tissues and may lead to infection and gangrene. Buerger's disease typically presents first in the hands and feet, and eventually may affect larger areas of the

arms and legs. Buerger's disease is rare in the United States, but is more common in the Middle East and Far East. Buerger's disease usually affects men younger than 40 years of age, although it is becoming more common in women. Virtually everyone diagnosed with Buerger's disease smokes cigarettes or uses other forms of tobacco, such as chewing tobacco. Quitting all forms of tobacco is the only way to stop Buerger's disease. For those who don't quit, amputation of all or part of a limb may be necessary. (www.mayoclinic.org)

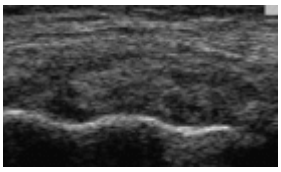
Guest Lecturer: Dr. Dan Gill spoke about musculoskeletal sonography as it pertained to sports injuries at the 2010 Vancouver Olympics. Dr Gill spoke about the opportunity he had to be part of the medical team that took care of overseeing the sports injuries of these Olympic games. There were 19 Radiologists, 51 US/CT/MRI/RT Technologists chosen to assist with the imaging/diagnosis of the injuries experienced during the competition of these winter games. This was the first time that all those modalities were utilized to service the medical needs of these athletes during an Olympic competition.

Their medical unit consisted of buildings that housed triage equipment at an approximate cost of $4million. GE was the vendor equipment supplier for this venue. Their medical unit consisted of 12 beds; portable X-ray/US machines; lifts/gurneys to take the injured athlete (most common injuries: snowboarding, bobsledding, skiing) from their stretcher where the athlete was placed from the mountain to triage. These injuries were triaged rapidly so that those critically ill athletes could be helicoptered to the nearest hospital equipped to handle their emergent injuries. The team was responsible for producing/diagnosing almost 1000 exams in 17 days~~mostly knee/shoulder/pelvis injuries with a (TAT) turnaround time of no more than 60 minutes.

Dr. Gill started familiarized us with some of the bony and musculoskeletal anatomy of the shoulder. The most flexible joint in the entire human body, our shoulder joint is formed by the union of the humerus, the scapula, and the clavicle.. The shoulder is made up of two separate joints - the glenohumeral and acromioclavicular joints.

The glenohumeral joint is a ball-and-socket joint formed between the articulation of the rounded head of the humerus (the upper arm bone) and the cup-like depression of the scapula, called the glenoid fossa. The glenoid fossa forms a very shallow socket, so the muscles, ligaments, and cartilage of the shoulder joint reinforce its structure and help to prevent dislocations. A ring of cartilage known as the labrum surrounds the glenoid fossa to extend the size of the socket while maintaining flexibility. To further reinforce the shoulder, the four muscles of the rotator cuff extend from the scapula and surround the head of the humerus to both rotate the arm and prevent dislocation. The acromioclavicular joint is formed by an articulation between the lateral end of the clavicle and the acromion process of the scapula. It is a flat, gliding joint that gives the shoulder joint additional flexibility that would not be possible with just the glenohumeral joint. Although both of these joints are held together by extensive ligament and muscle attachments, certain types of force can easily weaken the shoulder. The shoulder joint is vulnerable to dislocations from sudden jerks

of the arm. Chronic or acute wear and tear on the glenohumeral joint can lead to the painful tearing of the tendons of the rotator cuff or a torn labrum. Many of these conditions are very painful and may require surgery to remove or reattach the torn tissue. Dr Gill spoke about the glenohumeral instability of the superior aspect of the shoulder. **Rotator cuff tear** is a tear in one of the muscles or tendons surrounding the top of the humerus. A rotator cuff tear may be a sudden injury, or result from steady overuse. One of the most common injuries seen at the 2010 Olympics was **the ACL tear**. These athletes were competing on mountain ranges and were doing skeletal runs/skiing and many reach**ed** speeds of 60-80 miles per hour. Ligament injuries may appear as a complete interruption or replacement of the ligament by hypoechoic granulation tissue (complete tears) or with partial tears, where there is focal hypoechogenicity. In acute ligament injuries, the ligament is swollen with inhomogeneous echogenicity, whereas chronic injuries are associated with ligament swelling and hypoechogenicity. A complete tear of the ligament appears as a discontinuity; partial tears cause hypoechoic thickening. The collateral ligaments of the knee are easier to visualize with ultrasound than the cruciate ligaments due to their superficial location. The acutely torn PCL (posterior cruciate ligament) appears thickened (10 mm) and inhomogeneously hypoechoic with loss of its sharply defined posterior border. In acute ACL injury, a hypoechoic fluid collection is seen along the lateral wall of the femoral intercondylar notch. **Medial collateral ligament (MCL)** injury**:** The injured ligament appears as a thickened, inhomogeneously hypoechoic structure due to edema and hemorrhage. Tears usually affect the deep fibers lying superficial to the medial femoral epicondyle. The sensitivity of sonography in the detection of MCL injuries is approximately 94%.



The US image above represents a medial collateral ligament (MCL) injury. Longitudinal scan along the medial aspect of the knee shows thickened medial collateral ligaments with a hypoechoic area denoting acute injury. (source: J Ultrasound. 2009 Jun; 12(2): 53–60.)

Conclusion: Liz Lawrence thanked all the attendees and wished everyone Happy Holidays. The *next MSS Monthly Meeting will be held* ***on January 20, 2016 at St. Joseph Mercy Oakland in Pontiac.*** The speaker will be **Dr. Judith Bender~Crittenton Hospital;** the lecture will be on gynecologic ultrasound. The sponsor is: Chris Poplars; with Zonare Inc.

Respectfully Submitted,

Julie Atkinson, RDMS/RVT; MSS Secretary