

Case Presentation for Compartment Syndrome of Tibial Nerve

MATTHEW BRYK, VERED ARBEL, TERRY NICOLA AND TAL AMASAY

Department of Kinesiology & Nutrition; & Sports Medicine & Human Performance Center; University of Illinois at Chicago; Chicago, IL

Category: Undergraduate Student

ABSTRACT

CASE HISTORY: The patient is an active 60-year-old male who was seen in the emergency room following an injury to the right lower extremity due to heavy impact with the ground during a lacrosse tournament. He stated that he felt a sharp pain in the knee and that he could not run the next day. His pain continued to get worse and he began feeling sharp pins and needles on plantar surface. The patient was put on Xarelto (an anticoagulant) for the next six months and continued to consult with different doctors to further evaluate the progression of the injury. The swelling and pain eventually resolved but the pins and needles on the plantar aspect of the foot was persistent. **PHYSICAL EXAM:** Examination of the right lower extremity showed right thigh girth at the vastus medialis obliques to be 46 cm in comparison to 48 cm at the left thigh. The girth of the right calf was 1 cm smaller than the left calf at 40 cm. Manual testing found that strength and reflexes remained throughout the extremity, except for a notable loss of toe flexion strength. Ankle inversion was 3/5 on the right and 5/5 on the left. The tibialis posterior tendon was not palpable on the right. A dull pinprick assessment found that sensation was absent on the plantar surface of the right foot. These results indicated that there was a considerable loss of right flexor digitorum and right flexor hallucis strength, with a decrease in tibialis posterior function. **DIFFERENTIAL DIAGNOSES:** Deep vein thrombosis; popliteal artery entrapment; fibula or tibia fracture; ischemic necrosis or gangrene; stress fracture, medial tibial stress syndrome. **TESTS & RESULTS:** Patient had an MRI of the right lower extremity performed, which found diffused edema involving the deep posterior compartment, especially within the posterior tibialis muscle below the knee and flexor digitorum longus muscle. With further exams, minimal edema was found in the medial head of the gastrocnemius. Prominence of the deep compartment veins of the right lower extremity along the neurovascular bundle extending through the course of the tibial nerve and posterior tibial artery was also discovered. Postsurgical changes from a right ACL reconstruction, severe lateral compartment degenerative changes with loss of articular cartilage and osteophytes were found as well. **FINAL DIAGNOSIS:** Compartment Syndrome of Right Tibial Nerve. **DISCUSSION:** Compartment syndrome occurs when the tissue pressure inside of a compartment exceeds perfusion pressure from the local arterial supply. This pressure can build up due to bleeding, edema, or soft tissue damage in a closed muscle compartment. Acute trauma and overuse syndrome are the most common causes of compartment syndrome. Men are ten times more likely to develop compartment syndrome in the lower extremities than women. Males younger than 35 years of age who are involved in a high energy trauma possess the highest risk. **OUTCOME OF THE CASE:** The most recent MRI showed an improvement of diffuse edema involving the deep posterior compartment of the right lower leg with minimal persistent edema within the tibialis posterior muscle. Right knee joint degenerative changes continued to progress, especially in the lateral compartment. Given this long injury-span, the active patient was given a chance to do exercise therapy in a whirlpool. He was also prescribed Capsaicin cream. **RETURN TO ACTIVITY AND FURTHER FOLLOW-UP:** The patient was given a physical therapy order for 1-2 times per week. He will also receive transcutaneous electrical nerve stimulation for 20 minutes to stimulate the tibial nerve, an electromyography to evaluate the health of motor units, and an ultrasonogram of the tibial nerve during his follow-up visit in 4 weeks.