NON-CONTACT ACUTE COMPARTMENT SYNDROME IN A 20 YEAR OLD BASKETBALL PLAYER

Thomas Carson, ATS* Ryanne Ziobro M.Ed., LAT, ATC* Gregory K. Janik, DAT, LAT, ATC
*Department of Sports Medicine, King's College, Wilkes Barre, PA

BACKGROUND

PATIENT
- 20 year old division III male basketball player

HISTORY
- Patient reports playing basketball where during play he plantar flexed and inverted his ankle
- Diagnosed with a muscle strain after receiving X-rays and sent home
- Patient reports feeling a sharp pain and tingling sensation when walking around that night

OBSERVATION
- Patient was non weight bearing with large amounts of edema in his lower leg and ankle with a pallor skin tone

PALPATION
- Pain along the lateral aspect of his right leg from his fibular head to the distal portion of his lateral malleolus
- Neurological evaluation patient could not distinguish between sharp and dull sensations in the L4, L5, and S1 dermatomes
- Patient could not perform dorsiflexion or ankle eversion when testing myotomes and his posterior tibial pulse could not be identified

SPECIAL TESTS
- (+) Interdigital Neuroma
- (+) Talar Tilt
- (+) Tinel's

Decreased sensation along lateral lower leg

DIFFERENTIAL DIAGNOSIS

- Lateral Ankle Sprain
- Deep peroneal or distal tibial nerve compression
- Acute lower leg compartment syndrome
- Interdigital or lower leg Neuroma

TREATMENT

INITIAL CARE
- Patient was referred immediately to the emergency room to rule out lower leg compartment syndrome or any other neurological damage
- Computed tomography scan was performed, and patient was told to monitor symptoms

PHYSICIAN FOLLOW UP
- Patient's condition worsened and followed up with another doctor who diagnosed him with Acute Compartment Syndrome

TREATMENT
- Patient received an emergency Fasciotomy at the hospital and had a drainage tube inserted to help any excess swelling or fluid out of the lower leg compartment

Example of lower leg compartment syndrome[2]

Example of an emergency fasciotomy[3]

POST-OPERATIVE CARE
- Wound care for the long incision along the lower leg
- Rehabilitation consisted of received treatment for the nerve loss and regaining muscular control while the peripheral nerves heal
- Patient was compliant with exercise program and progressed out of his ankle brace 2 weeks earlier than expected

RETURN TO PLAY
- Patient currently reports being fully functional with no pain and no issues with everyday activities
- Patient is looking to return to Colligate level Basketball next season
- Follow up evaluations show improved neurological sensation and neuromuscular control of the lower leg muscles

UNIQUENESS

- Non-Contact Acute compartment syndrome injuries are very rare in college aged athletes. Compartment syndrome injuries are rare in athletics and commonly occur as chronic conditions due to stress and overuse that leads to pressure in the compartment as activity progresses and is relieved by withholding activity until the pressure subsides.
- The patient was looked at 2 times prior before being given the proper diagnosis as well as having their compartment syndrome progress to a later stage at which the injury was treated which could have led to other complications such as necrosis or loss of the limb.

RELEVANT EVIDENCE

- Stahel et al[1] determined 75% of all Compartment syndromes occur due to fractures and only 7.3% of 100,00 men would ever experience compartment syndrome with an average age of 32. Most of the time when a non-fracture compartment syndrome occurs is it a patient with larger muscle mass as they don't have as much room in the compartment. [1]

CONCLUSIONS

- Ankle sprains should not be overlooked when presenting with unusual symptoms
- Compartment Syndrome cases can occur from lateral ankle sprains
- Compartment Syndrome cases can be missed early after onset and can be confused for another injury
- Athletic Trainers should be aware of all treatment options and work closely with their team physician to determine appropriate treatments on a case by case basis

REFERENCES

1. Stahel PF, Mauser N, Gissel H, Henderson C, Hao J, Mauffrey C. Acute Lower-leg Compartment Syndrome. *Orthopedics*. 10.3928/01477447-20130724-07.
2. Taylor RM, Sullivan MP, Mehta S. Acute compartment syndrome: obtaining diagnosis, providing treatment, and minimizing medicolegal risk. *Current Reviews in Musculoskeletal Medicine*. 10.1007/s12178-012-9126-y.
3. https://dermaclose.com/fasciotomy-closure/