Isolated Lateral Compartment Syndrome of Lower leg

Dae-Cheol Nam, M.D., Ph.D., Young-Jin Park, M.D., Myung-Geun Song, M.D.
Department of Orthopaedic Surgery, School of Medicine, Gyeongsang National University, Jinju, Korea

Introduction

Compartment syndrome is a serious condition that occurs when there’s a large amount of pressure inside a muscle compartment. Swelling in a compartment can result in an increase in pressure inside the compartment. This result in injury to the muscles, blood vessels, and nerves inside the compartment. We experienced a young man who visited the hospital with severe pain in Lateral side of lower leg and foot drop that occurred after walking for a long time.

Case presentation

- 18 year old male, presented to ER with Lt side ankle pain, lower leg sensory disturbance and foot drop since 3 days ago.
- He walked for more than 3 hours three days ago.
- His weight was 117Kg and the height was 171cm, he was overweight state.
- He was received pain reliever injection and apply muscle relaxant at a local hospital. He was also given antibiotics with phlebotomy but did not improve.
- His ankle dorsiflexor and EHL show motor power Grade 2.
- Gross findings (Fig. 1) at the initial presentation.

- After one week, He visited outpatient clinic and showed foot drop with severe dorsal side foot pain and lower leg pain.
- Hospitalization was performed. And after hospitalization, MRI was taken.
- On MRI T2 view, Significant signal enhancement in the lateral compartment including the peroneal muscle in the lower leg has been identified.
- MRI findings (Fig. 2) at the initial presentation.

Fig. 2 T2 MRI view shows significant enhancement in the lateral compartment including the peroneal muscle in the lower leg has been identified.

- Intracompartmental pressure was measured and found to be 27mmHg (Fig. 3).

Fig. 3 Intracompartmental pressure was 27mmHg

- Emergency fasciotomy and debridement was performed due to chronic exertional compartment syndrome in clinical diagnosis (Fig. 4).

Fig. 4 intra OP gross photo
- Dusky gray color change on Peroneus muscle
- Infection sign(-)

- Delayed repair was performed 2 weeks after fasciotomy (Fig. 5).
- Foot drop, lowerleg tingling sensation and numbness of foot dorsum was remained.

→ EMG was performed 1 month after surgery, and as a result, it was diagnosed as severe axonotmesis with no regenerating evidence as a result of common peroneal neuropathy.

Fig. 5 Foot drop Lower leg tingling sensation Numbness on foot dorsum

EMG at POD 1mo
Common peroneal neuropathy
Severe axonotmesis without regenerating evidence

Fig. 6 POD 6mo
Tibialis anterior Gr4
EHL Gr4
Ankle neutral dorsiflexion

Fig. 7 POD 14mo
Tibialis anterior Gr5
EHL Gr5
Everter Gr4
Ankle dorsiflexion 5

f/u EMG
Moderate axonotmesis without regenerating evidence

f/u EMG
No denervation potential with regenerating evidence

References