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CLINICAL VIGNETTE

Muscle Hernias: A Cause of Chronic Leg Pain and Peroneal Nerve Neuropathy

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Case Presentation

A 46-year-old male without significant medical history presented to for evaluation of left leg swelling and pain for three months. He first noted symptoms after a ski trip, without significant injury or falls. The swelling localized to the lower lateral aspect his left leg, which was painful to touch. He described a burning pain with electrical shocks along his calf and ankle, which worsened with walking and running. There was no associated bruising or rash and ibuprofen was not helpful. The swelling and pain had not changed since onset and limited his ability to exercise or walk long distances.

On exam, he was comfortable with normal vital signs. Examination of the left leg revealed a tender area of non-pitting edema on the lateral lower leg. There was no associated dermatitis, erythema or fluctuance. Tinel test was positive on the left ankle.

Diagnostic Tests

- White Blood Cell Count (WBC): 9.84 (N 4.16 – 9.95 x10E3/uL)
- Hemoglobin: 14.4 (N: 13.5 – 17.1 g/dL)
- Platelet Count: 238 (N: 143 - 398 x10E3/uL)
- Creatinine: 0.96 (N: 0.60 – 1.30 mg/dL)
- Hgb A1c: 6.3% (N: <5.7%)
- TSH: 1.7 (N: 0.3 - 4.7 mcIU/mL)
- HIV-1/2 Ag/Ab: Nonreactive (N: Nonreactive)
- RPR: Nonreactive (N: Nonreactive)
- Vitamin B12: 418 (N: 254 - 1,060 pg/mL)

An ultrasound of left lower extremity showed no soft tissue mass or fluid collection. A magnetic resonance image (MRI) of the Left Tibia and Fibula with+without contrast showed focal contour abnormality of the peroneus longus muscle with a suggestion of a focal fascial defect measuring 1.9 x 1.9 cm. These findings were suggestive of muscle herniation. No mass, fluid collection, or hematoma was noted. Electromyography (EMG) and Nerve Conduction Study (NCS) revealed an isolated left superficial peroneal neuropathy with a moderate conduction block and axonal loss across the muscular defect. There was no EMG evidence of a left lower extremity radiculopathy, plexopathy, or mononeuropathy.

Discussion

Muscle hernias are focal protrusion of muscle tissue through a fascial defect. The most common cause of muscle hernias is

trauma, either direct, from contusion, wounds or fractures, or indirect due to intensive physical activity. They often occur in the lower extremities in active young adults, with the most commonly affected muscle the tibialis anterior. The tibialis anterior is located in the superficial anterior compartment, where it is vulnerable to trauma.^{1,2} The superficial peroneal nerve, also called the superficial fibular nerve, is the most commonly reported nerve involved in leg muscle hernias.^{3,4} After initial trauma, symptoms can appear weeks or even years later. Most lesions are asymptomatic and found incidentally or due to cosmetic complaints. On exam, muscle hernias appear as soft tissue swelling with rounded, well-defined margins. They are soft to palpation and may be reducible.^{5,6}

A Tinel sign may be present at the site of the hernia if there is nerve compression.³ This can include Tinel sign, tingling or pins and needles sensations associated with tapping over the specific nerve. Dynamic ultrasound can detect the fascial defect during muscle contraction. If ultrasound is equivocal, MRI can confirm.⁶

Asymptomatic muscle hernias do not require any intervention. Patients presenting with cramping and tenderness should be managed conservatively with rest and compression of the area. Burning pain, numbness, and paresthesias raise concern for nerve entrapment or injury. Symptoms refractory to conservative measures can be treated surgically with a fasciotomy and nerve release if nerve compression is present. Alternative surgical intervention like direct approximation of fascial edges may be performed if there is risk of compartment syndrome and recurrent hernia.^{2,6,7} The differential diagnosis of cutaneous lumps also includes varicose veins, hematomas and lipomas.^{5,6,8}

Following the muscle hernia diagnosis, our patient consulted with an orthopedic specialist and obtained an electromyography (EMG)/nerve conduction study (NCS) showing peroneal neuropathy. Since his symptoms had not improved, he was scheduled for surgery: left leg lateral compartment fasciotomy and superficial peroneal nerve release. At the time of this case report, the surgery had not been scheduled.

Muscle hernias are most common in the lower extremities and should be considered in patients presenting with a soft tissue swelling and neuropathic leg pain following an injury or strenuous physical activity. The diagnosis can be made clinically on exam. Dynamic ultrasound or MRI can confirm

the diagnosis. Symptomatic muscle hernias are usually treated conservatively with rest and compression stockings. Refractory cases should be referred to orthopedic specialists for consideration of fasciotomy and nerve release.

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