Persistent Leg Pain in a Cross Country Runner

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Disclosures

• I have no financial or conflicts of interest to disclose
Initial Presentation

- 25 yo female presents with 10 years of exertional bilateral leg pain
- Previously seen at outside hospital, presents to office with worsening symptoms
- Described as pain, swelling, and numbness bilateral lower legs, left worse than right
- Symptoms now present with activities of daily living
- Worse in the morning with moderate swelling below the knee
- Numbness associated with “dead foot” sensation
Medical History

• PMHx
  – CECS, Anemia (resolved)
• Medications
  – Celecoxib, pantoprazole, vitamin D
• Allergies
  – Penicillins
• Surgical Hx
  – Bilateral four compartment fasciotomy (2012), Left 2 compartment fasciotomy (2015), Right 2 compartment fasciotomy (2016)
• Family Hx
  – Mom and dad healthy
• Social Hx
  – nonsmoker, social alcohol, no illicits, runner
Past Medical History

- Former collegiate runner, symptoms began when increasing exercise level during high school track, worsened significantly in college
- At that time symptoms after 6 minutes (left) /12 minutes (right) of exercise
- Swelling, pressure, “tension” bilateral lower legs
- Felt worst anteriorly and laterally
- No discoloration or temperature changes
Past Medical History

- 2012: positive compartment testing with subsequent bilateral 4 compartment fasciotomy
- Initial improvement, gradual return of symptoms
- 2015: 2 compartment release left
- 2016: 2 compartment release right
Previous treatment

- s/p multiple cycles of physical therapy
- Gait analysis/training
- New shoes
- NSAIDs
Physical Exam

- **General**
  - Well appearing in no apparent distress
- **Cardiac**
  - No regular rate and rhythm, no murmurs rubs or gallops
- **MSK**
  - Normal gait
  - Bilateral healed **fasciotomy scars**, no significant erythema, ecchymosis, rashes
  - Normal proprioception, pain free single leg toe raises
- **Vascular**
  - +1 bilateral pitting edema LE below knee
  - 2+ DP and PT with diminished pulses left>right with knee extension and dorsiflexion
- **Neuro**
  - Intact sensation to light touch
  - Negative tinel at fibular head and tarsal tunnel
Differential Diagnosis

- Popliteal Artery Entrapment
- Peroneal Nerve Impingement
- Exertional Compartment Syndrome
- Dependent Edema
- Neuropathy
Recommendations

- MRA with dorsiflexion and plantarflexion
- Consider consultation with Vascular pending results
- EMG possible next step if MRA normal
- Wound consider cardiac work up
• MRA with dorsiflexion and plantarflexion
  – Normal popliteal artery waveform and velocities at rest, plantarflexion, and dorsiflexion
  – Patent popliteal veins bilaterally with almost complete obliteration with dorsiflexion
• Consider consultation with Vascular pending results
  – Ordered
• History
  – No prior DVTs, family history of hemophilia (brother), patient known to be a carrier, has had heavy periods and gingival bleeding
• Physical Exam
  – 2+ pulses carotid, subclavian, radial, ulnar, popliteal, dorsalis pedis, posterior tibialis
  – 1+ leg swelling at rest
  – No popliteal bruit with heel raises but reproduced symptoms left>right
  – Supine knee hyperextension and ankle dorsiflexion reproduced symptoms
• Office Vascular US
  – Normal arterial velocities with dorsiflexion
  – **Bilateral popliteal vein compression** with dorsiflexion
• Working Diagnosis
  – Venous popliteal entrapment
• Recommendations
  – Compression
  – Rest from activities
  – IR referral for further imaging
Interventional Radiology Consultation

• History
  – Symptoms had improved with rest but returned immediately with any attempt to resume exercise
  – Now *predominantly moderate swelling in the lower legs*
  – Now notes *mild thigh swelling*
• In office US
  – Significant soft tissue edema calves and thighs
  – Normal venous flow, no change with provocative maneuvers
• Working Diagnosis
  – Possible popliteal venous entrapment however edema of thighs unexplained
• Recommendation
  – Bilateral lower extremity diagnostic venogram with maneuvers
Testing

- Venogram
  - Right:
    - Patent posterior tibial, popliteal veins
    - **Extrinsic compression of popliteal vein with dorsiflexion** that releases on plantar flexion and neutral position
    - Patent femoral vein, normal iliac vein and IVC
  - Left:
    - Patent posterior tibial, popliteal veins
    - **Extrinsic compression of popliteal vein with dorsiflexion** and releases on plantar flexion and neutral position
    - Patent femoral vein
    - Patent iliac vein but mild reflux to small pelvic and peri-uterine collaterals (possible compression)
    - **May-Thurner?**
Testing
Testing
Recommendations

• Dedicated Knee MRI to evaluate causes of extrinsic compression
• Consider MRV for better evaluation of left iliac vein
• Continue activity modification, compression
• Diagnosis: Popliteal venous entrapment, possible May Thurner
• Pending evaluation: Knee MRI, MRV
• Treatment
  – Would consider surgery to relieve extrinsic compression
  – Iliac vein stenting if +May Thurner
• General considerations
  – Consider vascular early on
  – Hemophilia trait protective for DVT?
• Osteopathic considerations
  – System based practice
    • Interprofessional health care team for optimal patient care
Thank you!

• Questions?