Young Patients With Intermittent Claudication: Some Uncommon Etiologies And How They Should Be Treated

Brian G. DeRubertis, M.D., F.A.C.S.
Associate Professor of Surgery
Director, Gonda Ambulatory Procedure Unit
UCLA Division of Vascular Surgery, Los Angeles, California

Disclosures

In the last 12 months I have served as a consultant, speaker, proctor or served on an advisory board for the following companies:
- Abbott Vascular
- Boston Scientific
- Cook Medical
- Medtronic

Prevalence of PAD increases with age:
- < 40 yrs Extremely uncommon
- 45-50 yrs 1%
- >50 yrs 3 – 3.5%

Atherosclerotic occlusive disease in persons under 40 years of age is exceedingly rare.

The most common diagnoses in this age group for symptoms suggestive of claudication or physical signs of lower extremity ischemia include a small group of uncommon diagnoses.

- Popliteal entrapment
- Cystic adventitial disease
- Vasculitis +/- thrombosis
- Hypercoagulable state with arterial thrombosis
- Anatomic abnormalities (i.e. bony exostosis)
- Chronic compartment syndrome
- Early onset atherosclerotic disease

Because of the low frequency of PAD in young persons and the unfamiliarity most referring doctors have with these diagnoses, many patients suffer extended delays in treatment.

Even among vascular interventionalists, misdiagnosis of these patients can occur, oftentimes with deleterious outcomes.
Young Patients with Lower Extremity Vascular Disease: Recent UCLA Experience

- Retrospective single institution review
- Search for all patients with diagnosis of claudication or limb-threatening ischemia under age of 45 years
- Assessed patient demographics, comorbidities, diagnosis, and treatment modality with associated results.

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### Popliteal Entrapment

42 year old woman
- Referred after reporting symptoms to 2 PMDs
- 6 year history of right calf claudication
- Exercise ABI: 0.82 -> 0.3

#### Treatment
- Patent artery – may release compressive bands or accessory muscle slip
- Occluded artery – interposition vein graft for short segment (posterior approach) vs bypass via medial approach

#### Several anatomic variants
- External compression of the popliteal artery by:
  - Medial course of the popliteal artery (behind medial gastrocnemious head)
  - Anomalous insertion of the medial head of the gastrocnemious muscle,
  - Accessory slip of medial gastrocnemious head
  - Compression by the popliteus muscle
Arterial Injury from Bony Exostosis

- 24 yo otherwise healthy male
  - Prior avid runner
  - Developed acute onset of right thigh/calf pain 10 months prior to presentation
  - Associated mass and bluish discoloration of distal thigh
  - Had been evaluated by 3 different physicians in last 10 months before referral to vascular surgeon

Arterial Injury from Bony Exostosis

- Sparse reports in orthopedic and vascular literature
- Most often involve injury to the adjacent artery
- Repair often involves interposition grafting with vein conduit and resection of bony abnormalities
- Prognosis is thought to be favorable due to the relatively focal nature of the lesion caused by the bony abnormality

Cystic Adventitial Disease

- 37 yo male without significant comorbidities
  - Age-group triathlete
  - Claudication resolving within one hour
  - Symptoms included severe numbness in foot and lower leg with exercise
  - Evaluated by two physicians before referral to vascular surgeon

Cystic Adventitial Disease

- Often focal in nature, can occur without underlying damage to artery
- May be treated by surgical enucleation of cyst through a posterior popliteal exposure
- Associated popliteal occlusion requires resection and interposition vein graft
- Percutaneous aspiration can be successful but can be accompanied by recurrence
- Extraluminal position makes it unsuitable for endovascular repair
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**Cystic Adventitial Disease**

24 yo healthy male
- Weight lifter, muscular lower extremities
- History of anabolic steroid use
- No known hypercoagulable conditions
- Two-year history of bilateral calf claudication, with recent development of left foot rest pain and small interdigital ulcer

**Thrombotic Occlusion**

- Lower extremity vascular disease in patients under the age of 45 yrs is typically due to one of several non-atherosclerotic causes
- The rarity of these diagnoses typically leads to extended delays in appropriate care
- The disability these conditions cause in young active patients warrants intervention/surgery in most cases
- Most of these conditions require surgical intervention
- Long segment occlusions of unclear etiology can be cautiously managed with percutaneous intervention, but postoperative imaging should be performed to rule out potential compression syndromes

**Conclusion**