PVD Case Presentation

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Presenter Disclosure

Presenter: Naomi Wedel

I have no current relationships with commercial entities

Patient Demographics

- 23-year-old female
- PMHx:
  - Seizures in teens
  - Childhood asthma
- Social Hx:
  - Smoking ½ pack per day
  - No other drugs, social alcohol
  - Recent arrival in Canada as Ukranian refugee
- Family Hx:
  - “Vascular disease”/arterial thrombosis resulting in amputation maternal uncle and maternal great grandmother

INITIAL PRESENTATIONS

- Multiple presentations to ED over 4 months = pain in left ankle/arch with ambulation that resolved with rest
  - Presumed tendinitis/plantar fasciitis -> rest and physio
- July 2024 presents to ED
  - Progressive left short-distance claudication calf and arch x5/12 and ischemic RP x2/52, cool foot, paresthesia to toes and non-palpable distal pulses
  - CTA = Left popliteal artery occlusion with poor enhancement runoff, remainder of arteries no obvious atherosclerosis, ?popliteal fossa soft tissue density
  - Vascular consulted and admitted for workup

Investigations Round 1

- Soft tissue abnormality -> MR lower extremity = no mass, no anatomy consistent with popliteal entrapment
- Thromboembolic/Hypercoagulable workup
  - CT Chest Enhanced = no proximal source of embolus, no malignancy
  - Holter = no arrythmia
  - Transthoracic ECHO = normal, no thrombus or PFO
  - Thrombophilia = APLA negative
  - Lipids = normal
  - US lower extremity = no DVT
- Inflammatory/Infectious/Vasculitis workup
  - Normal CRP, ANA, RF
  - Nonreactive hepatitis

Hospital Stay 1

- Diagnostic Angiogram = CTO popliteal, TPT, prox PTA, prox ATA, peroneal, DPA and then reconstitution of PTA as dominant runoff to foot
- Developed SVT medial branch GSV left leg while on therapeutic tinzaparin
- Improved symptoms on HM and gabapentin
- Patient opted medical management over bypass
  - Pain control with HM and Gabapentin, Therapeutic tinzaparin, Smoking cessation
- Diagnostic uncertainty remains

FOLLOW UP

- Vascular Clinic: 2 weeks after discharge
  - Can walk 10 minutes from previous 5 minutes, no ischemic rest pain
  - Persistent paresthesia to toes
  - Switched to Apixaban and encourage smoking cessation
- Thrombosis Clinic (for SVT): 4 weeks after discharge
  - Worsening claudication and ischemic rest pain
  - Switched back to therapeutic tinzaparin
- ED Presentation: 6 weeks after discharge for worsening pain
  - New small ischemic wound to plantar aspect D5 MT head
  - Still smoking
  - Admit to vascular

Hospital Stay 2

- Repeat Angiogram = CTO popliteal, TPT, PTA, Peroneal and ATA
  - Collateral only filling plantar arch, segment open mid-ATA
- Operation: Left mid-SFA to ATA
  - Small ATA ~1mm, thrombectomy of ATA with minimal back bleeding
  - L GSV small and sclerotic, unable to distend (prior SVT)
  - R GSV harvest good quality -> non-reversed with valve lysis
  - Completed bypass -> no distal doppler signal and on-table angiogram no runoff distal to anastomosis in ATA
  - Redid distal anastomosis -> no doppler signal and no flow through ATA with angiogram, only collaterals perfusing foot

Next Step

- Angiogram with IR- POD3
  - Recanalized distal popliteal occlusion, recanalized native ATA and PTA, occluded bypass
  - Noted reactivity of vessels during angioplasty, significant pain reported by patient
  - Raised concern for vasculitis

- Rheumatology consult for vasculitis
  - Endorse some Raynaud syndrome symptoms in hands
  - Given prednisone x1 while investigations pending
  - Workup: Negative/normal
    - ANCA, ENA, dsDNA, C3/C4, SPEP/UPEP, IgG4, IgA/IgM/IgG, syphilis, TB, HIV, TSH
  - MR carotid normal
  - MR upper extremity = distal radial artery occlusion with wall thickening

DIAGNOSIS

What is the likely etiology of the arterial occlusion?

1. Atherosclerosis
2. Embolic
3. Thrombophilia
4. Large-vessel vasculitis
5. Mixed connective tissue disease
6. Popliteal entrapment
7. Thromboangiitis Obliterans

Hospital Stay 2

- Working diagnosis = Thromboangiitis Obliterans
- Vascular: post-angio
  - Good distal dopplers
  - Improving claudication and rest pain
  - Demarcation of gangrene to D1-D3
- Discharged with outpatient follow up with podiatry and rheumatology
  - DC on Apixaban

Hospital Stay 3

- Re-admitted to hospital 1 month postop with dehiscence of left thigh and lower leg incision
  - Bedside debridement and negative pressure therapy
  - Wound culture MSSA treated with course Ancef
  - CTA = patent popliteal artery with poorly visualized runoff
  - Duplex US = ABI 0.5/TP 60, TPT stenosis, distal ATA/DPA occluded
  - Symptoms stable: persistent rest pain but good distal doppler signals
  - Stable dry gangrene D1-3
  - Stopped smoking

Outpatient Follow Up

- Rheumatology:
  - Satisfied with working diagnosis of TAO
  - PET scan no signs of active vasculitis
- Podiatry:
  - Monitoring dry gangrene D1-D3, conservative management per patient preference
- Vascular:
  - Ischemic rest pain persists, manages with HM and gabapentin
  - FUP Duplex 6 months postop = ABI 0.7 (0.5)/TP 40 (60), recurrent occlusion distal popliteal artery and mid-ATA occluded to DPA, patent PTA and peroneal

BUERGER'S/THROMBOANGIITIS OBLITERANS

- Young male = 23F smoker from Ukraine
  - Median age diagnosis 34 yo
  - <1% women
  - 98% associated with smoking
  - Middle east, Asia, Mediterranean and Eastern European
- Clinical:
  - Calf and arch claudication = misdiagnosed as plantar fasciitis and Achilles tendinitis
  - Ischemic neuritis
  - Superficial migrating thrombophlebitis 45-60% = SVT GSV
  - Raynaud Syndrome
  - Common multi-limb, LE > UE involvement = Left LE, ?UE involvement

BUERGER'S/THROMBOANGIITIS OBLITERANS

- Dx = Histopathology non-necrotizing, non-granulomatous, intact internal elastic lamina
  - No markers of inflammation or autoantibodies
  - LE > UE segmental occlusion of small and medium arteries and normal proximal arteries = Popliteal/tibial CTO
  - Angiography suggestive (corkscrew collaterals seen)
- Tx = Smoking cessation, if continue smoking high rates of amputation and recurrence
  - Exercise
  - Wound care
  - Pain management -> NSAID, opioids, blocks, iloprost, CCB, prostaglandin
  - Revascularization: Endovascular vs. bypass