Pigmented Villonodular Synovitis: Arthroscopic Management of an Underappreciated Cause of Joint Pain in Children and Adolescents

S. Clifton Willimon, MD
Michael T. Busch, MD
Tim Schrader, MD
Crystal A. Perkins, MD
Disclosures

- I (and/or my co-authors) have something to disclose. Disclosures are available on the POSNA annual meeting app.
Disclosures

- Benign proliferative synovial disorder
- Hemosiderin-laden villous and nodular lesions
- 1.8 cases per million people
- Presents in 20s and 30s
- Swelling, pain in affected joint, decreased motion
- MRI: hyperplastic synovium, “blooming” artifact (hemosiderin)
- Open or arthroscopic synovectomy
Literature Review

• Adult disease
• Lack of pediatric studies
  – 2 case series (15 total patients)
  – 9 single-patient case reports
    • Knee (3)
    • Hip (2)
    • Sacrum
    • Calcaneocuboid
    • Elbow
    • Multifocal

Baroni et al. *J Child Orthop* 2010

Neubauer et al. *Iowa Orthop J* 2007
Purpose

• To describe the presentation, management, and outcomes of a single-center series of pediatric patients with PVNS
Methods

• IRB approved retrospective review
• January 2001 – December 2016
• Patients identified by ICD and CPT codes and keyword search of radiology and pathology reports.
• Inclusion criteria: <20 years of age, histologic diagnosis of PVNS
Results

• 25 patients
• Average age 11y (2-17y)
• F>M 1.3 : 1
• Joint Location
  – Knee (17)
  – Hip (5)
  – Ankle (1)
  – Shoulder (1)
  – Elbow (1)

• Exam Findings
  • Effusion, tenderness, painful/decreased ROM
• Duration of symptoms prior to evaluation = 11.6 months (0 – 99 mo)
  • Pain 72%
  • Swelling 60%
  • Specific injury 60%
Results

- Misdiagnoses 68%
  - Inflammatory arthritis
  - Infection
  - Trauma
  - Meniscus tear
  - Bleeding disorder
- Radiographs normal 88%
- MRI diagnostic 72%
Results

- 37 surgeries
  - 17 patients single surgery
  - 8 patients two surgeries
  - 1 patient biopsy + synovectomy x3
- Majority arthroscopic synovectomy (89%)

- 88% disease-free at mean 15 month follow-up
- 3 patients with MRI persistence
  - All knees
  - 2 asymptomatic
  - 1 serial MRI progression referred for cryoablation
4yo M with 1 month left thigh pain and progressive inability to bear weight
4yo M with 1 month left thigh pain and progressive inability to bear weight

6 months post-op
Discussion

- PVNS should be considered in pediatric patients with an insidious onset of joint swelling +/- pain whose lab studies and imaging do not support infectious or rheumatologic etiology
- 70% of affected children 10-14 years of age
- Knee is the most common joint
- Symptoms are present for months to years prior to diagnosis
- MRI is diagnostic imaging study of choice
- Arthroscopic synovectomy produces good outcomes with low rates of persistence
Thank you!

S. Clifton Willimon, MD
cliff.willimon@gmail.com
919-323-5601

Crystal Perkins, MD
crystalperkins11@gmail.com
404-414-6088