Lumps and Bumps: Soft Tissue Masses of the Extremities

H&P

- 62y F with painful lump around elbow x 5 weeks
Sarcoma - a RARE disease

- Nationwide incidence
  - Soft tissue sarcoma ~12,000 (<1%)
  - Primary Bone Sarcoma: ~3,000
- Compare to:
  - Breast/Prostate Cancer: 233,000
  - Lung Cancer: 225,000
- Small numbers, lack of robust clinical studies, lumping together of histological subtypes

Lumps & Bumps

- Painless
- Slowly enlarging
- Incidentally noted
- Lack of systemic or constitutional symptoms

Evaluation

- Not all tumors obey the textbooks:
  - Small <5cm and superficial (to fascia) = benign
- Imaging
  - Xray
  - CT
  - MRI
    - With gadolinium contrast
- Biopsy
  - Best to refer to sarcoma center BEFORE biopsy
  - Limb Salvage Surgery attainable >90%
MRI for Soft Tissue Masses

- T1: DARK
- T2: BRIGHT
- Gadolinium
  - Peripheral vs. central enhancement
- "It's there but diagnosis uncertain."
- MRI doesn’t put a name on it
- Characteristic Imaging Findings

✅ Diagnostic

Lipoma

- SAME signal intensity as fat on ALL sequences

Left Ti and Right STIR
Atypical Lipoma & Liposarcoma

T1 FS post gad (L) and T1 (R)

Atypical Lipoma

Well Differentiated Liposarcoma
Liposarcoma
4 variants

Histo

Neurogenic Tumors

- Benign
  - Schwannoma
  - Neurofibroma
  - MPNST
OPEN BIOPSY PRINCIPLES

- Extensile incision that can be incorporated into definitive resection.
- Minimal ST dissection/development of planes to avoid contamination.
- Avoid exposure of major neurovascular structures.
- For bone tumors, Bx should include ST mass.
- Use drains to decrease hematoma. Bring drain thru distal incision b/c drain site must be excised also.
- Excisional biopsy can be performed for presumed benign lesions or lesions small enough (2cm diameter or less) to include a cuff of normal tissue.
- Use tourniquet to exsanguination.
- Same surgeon should perform Bx, definitive resection.
Undifferentiated Pleomorphic Sarcoma

Diagnosis & Staging

- Histologic Subtype
- Grade
- MRI local site
- CT chest
- Bone Scan
- PET scan

- Liposarcoma
- Leiomyosarcoma
- Malignant Peripheral Nerve Sheath Tumor
- Pleomorphic Sarcoma

Low Grade Sarcoma

- Mainstay is surgical excision by WIDE margin
High Grade Sarcoma

- Wide resection
- (Neo)adjuvant therapy
  - Radiation
    - Improved LOCAL control
  - Chemotherapy
    - Esp recurrent and/or metastatic disease

Surgical Decision Making

- Resection
  - Adjuvant Therapies
  - Surrounding structures
    - Neurovascular elements
    - Bone/periosteum
    - Skin/Subq tissue
    - Prior surgery/radiation
- Reconstruction
  - Adjuvant Therapies
  - Flap/graft requirement
  - Dead space management
  - Soft tissue (Ligaments/Tendons/etc) function
  - Bone prophylaxis

Postop/preop MRI
Plan

- Tumor Bed Resection
Tumor Bed Resection

- Allograft patellar tendon reconstruction
- Gastrocnemius Rotational Flap
- STSG
- Prophylactic Internal Fixation Tibia
  - Medial proximal tibial plate and screws

Reconstruction

- Surveillance (LR and Distant dz)
  - q 3mo x 2y
  - q 6mo x 3y
  - yearly
“The Hazards of Biopsy”
Mankin et al, JBJS 1982

- Study based on survey of MSTS membership. Members asked to submit records on 20 consecutive Px's who underwent Bx and subsequent Tx for malignant primary bone/ST tumor.
- 329 Px's (222 bone, 107 ST)
- 18.2% major errors in Dx.
- 10.3% technically poor/inadequate Bx's.
- 18.2% major change in Tx plan due to problems c Bx.
- 4.5% unnecessary amputations.
- Complications 3-5x more frequent when performed @ referring institution rather than center of definitive Tx.
- CONCLUSION: Refer Px's to treating center before performing a Bx!

“The Hazards of Biopsy, Revisited”
Mankin et al, JBJS 1996

- Repeated same MSTS-based study 10 years later.
- 597 Px's (362 bone, 235 ST)
- 17.8% major errors in Dx (18.2% in '82 study).
- 8.4% technically poor/inadequate Bx's (10.3% in '82 study).
- 19.3% major change in Tx plan due to problems c Bx (18.2% in '82 study).
- 3% unnecessary amputations (4.5% in '82 study).
- Complications 2-12x more frequent when performed @ referring institution rather than center of definitive Tx (3-5x in '82 study).
- CONCLUSION: We haven’t learned our lesson! Refer the Px BEFORE Bx or you WILL hurt somebody!

61y M with “sciatica” and atraumatic onset thigh hematoma.

- Meds: No anticoagulants
And back to our intro case...
62 y F with painful lump x 5 weeks

Physical Exam

Workup?

- B. HENSELAE IGG SCREEN
  - B. HENSELAE IGG TITER 1:128 H <1:64
- B. HENSELAE IGM SCREEN
  - B. HENSELAE IGM TITER 1:20 H <1:20