SOFT TISSUE MASSES IN CHILDREN

Imaging lessons learned (some the hard way)

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No disclosures
Good judgment comes from experience. And where does experience come from? Experience comes from bad judgment.
World Health Organization - Soft Tissue Tumor Classification 2013

- Adipocytic Tumors
- Fibroblastic / Myofibroblastic Tumors
- So-called Fibrohistiocytic Tumors
- Smooth-muscle Tumors
- Skeletal-muscle Tumors
- Vascular Tumors
- Nerve Sheath Tumors
- Tumors Of Uncertain Differentiation (includes synovial cell sarcoma)
- Undifferentiated / Unclassified Sarcomas (many of these called MFH in the past)

http://sarcomahelp.org/reviews/who-classification-sarcomas.html
Soft tissue masses/tumors - Overview

- Imaging approach
- General principles
- Age related differential diagnosis
- 5 lessons learned
Soft tissue masses/tumors

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Palpable mass

X-ray
- Calcification-?myositis ossificans

CT

US
- Diagnostic STOP
- Indeterminate

MRI
- Determinate
- Indeterminate

Biopsy

17Y girl with “foot bump”
Soft tissue masses/tumors

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General principles

• Majority of ST masses are benign
• Vascular anomalies are most common – heterogeneous group
• Age, location, clinical history – important
• Identification of adipose tissue – helpful
• Doppler – don’t just rely on color flow
Soft tissue masses/tumors

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Patient < 2 yrs

- Vascular lesions – tumors/malformations
- Fatty “tumors” (lipoblastoma, involuting infantile hemangioma, fibrous hamartoma of infancy)
- Infantile myofibromatosis/myofibromatosis
- Infantile fibrosarcoma
- Inflammatory (abscesses, subcutaneous granuloma annulare, etc.)
Older Child

- Traumatic (hematoma, myositis ossificans, etc.)
- Vascular lesions
- Myxoid liposarcoma
- Rhabdomyosarcoma (any age)
- Other sarcomas
Vascular Anomalies

Vascular Tumors
- Hemangioma
  - Infantile
  - Congenital
    - RICH
    - NICH
- Hemangioendothelioma
- Angiosarcoma
  - Others
    - Kaposiform
    - Spindle Cell
    - Epithelioid
    - Others
  - Others
    - Tufted angioma
    - Pyogenic granuloma
    - PHOST
    - FAVA

Vascular Malformations
- Venous
- Lymphatic
- Arterial
- Capillary
- Combined

8d infant

f/u age 5 mo
Soft tissue masses/tumors

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2Y girl – buttock asymmetry

7m boy – elbow mass

Lipoblastoma

Fibrous hamartoma of infancy
12Y boy

Well diff. liposarcoma

19Y girl

Lipoma
5 lessons learned

• Fat is generally a good thing (pt age is most predictive of type of lesion)
Cystic met (adamantinoma)

Cat scratch
5 lessons learned

• Fat is generally a good thing (pt age is most predictive of type of lesion)

• Not everything that is “cystic” is a cyst
5Y boy R shoulder mass
Soft tissue
Ewings sarcoma
5 lessons learned

• Fat is generally a good thing (pt age is most predictive of type of lesion)
• Not everything that is “cystic” is a cyst
• “Cyst” on MR not clearly connected to joint – give gad
5 mos later

STIR

T2 No FS

T2 FS

T1 FS +C
5 lessons learned

• Fat is generally a good thing (pt age is most predictive of type of lesion)
• Not everything that is “cystic” is a cyst
• “Cyst” on MR not clearly connected to joint – give gad
• Intra-articular mass-like “fluid signal” – give gad
10Y girl

13Y boy

Thigh lump
5 lessons learned

• Fat is generally a good thing (pt age is most predictive of type of lesion)
• Not everything that is “cystic” is a cyst
• “Cyst” on MR not clearly connected to joint – give gad
• Intra-articular mass-like “fluid signal” – give gad
• Imaging ≠ histology
3.5Y boy, arm mass, poss NAT

17Y boy, L groin mass, no trauma
High grade sarcoma with epithelioid features (abundant hemosiderin)

Myositis ossificans (unchanged x-ray f/u)
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