What’s that Lump & Bump?

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Aims

• Why and Who?
• To identify common lumps and bumps
• Ultrasosund features and simple descriptors
• ? Benign Vs Malignant
• Recognise limitations and what requires further imaging
Why & Who?

• Why?
  – Reassurance?
  – Prior to removal
  – Worrisome clinical features
    • trying to sort the malignant from the benign
    • Decide which masses require further investigations/biopsy
Why & Who?

• Who?
  – General Sonographers/Radiologists?
  – MSK Sonographers/Radiologist?
Lumps and Bumps

• Clinical Examination
  — “Lump . ? Cause”

• Where?
• How long? Growth Pattern?
• Mobile or Fixed? Soft or Hard?
• Skin Changes?
• Systemic Symptoms?
Ultrasound Examination

• Location
• Shape/Margins/Size
• Echotexture/Internal Characteristics
• Sonopalpation & Dynamic Assessment
• Comparison views
Doppler Assessment

• Aggressive Tumours tend to have increased vascularity than benign
• Caution required!
• Pseudo-vascularity
• Microvascularity (SMI)
• Overlap of features
• Cannot reliably differentiate between benign or malignant
Lipoma

- Fatty benign tumours
- Common and account for nearly half of all soft tissue masses
- Present for many years with little growth
- Malignant transformation non-existent
Lipoma

- Soft/rubbery
- Subcutaneous
- Relatively compressible
- Elliptical/ovoid
- Avascular
- Fibrous striations which run parallel to the skin
- 80% <5 cms
- Echogenicity variable relative to subcutaneous fat
Lipoma
Deep Lipomas & Liposarcoma

• More variable ultrasound features
• Ultrasound diagnosis less accurate
• Intra or Inter muscular lipomas are difficult to separate from liposarcoma
• Higher prevalence of liposarcoma in deeper tissues
Liposarcoma

- Malignant fat containing tumour
- Various subtypes
- Low grade liposarcoma may be referred to as atypical lipoma
Deep lipoma & Liposarcoma
Protocol

• MRI for lesions
  – >5cm
  – <5 cm but unusual features
  – Deep lipoma (Inter & Intra Muscular)
Nerve Tumours

• Derived from Schwann cells
• Include: benign neurofibromas and schwannomas and malignant peripheral nerve sheath tumours (MPNST)
• Clinical diagnosis: Tinel Sign
• Ultrasound diagnosis: Sonopalpation may cause Tinel sign and recognition of the mass arising from the nerve
Nerve Tumours
Hernia

• Femoral
• Inguinal
• Abdominal wall/Umbilical/Epigastric
Hernia
Baker’s Cyst

- Swelling in Popliteal Fossa
- Asymptomatic
- Knee Pain
- Pain
- Pressure symptoms
Baker’s Cyst

• Medial gastrocnemius-semimembranosus bursa
• Usually communicates with the knee joint
• Very common
• Incidentally found on DVT scans
Baker’s Cyst
Lymph Nodes

- Normal lymph nodes are flat, bean shaped structures
- 0.25cm – 1 cm (ish). There are normal exceptions
Assessment of Normal Lymph Nodes

- “Sausages are good footballs are bad” (Rhodri Evans 2011)
- If you’re going to measure always measure the short axis
- Assessment the hilum (in those nodes large enough to)
- Hyperaemia doesn’t always mean bad – can be reactive
Signs of Abnormality In Lymph Nodes

• Several features can be used to try and discriminate between benign and malignant lymph nodes
• They should always be used in combination as alone they are not diagnostic.
• The main features to be considered are
  – Size
  – Shape
  – Echotexture
  – Appearance of the hilum
  – Presence of necrosis
  – Nodal margins
  – Location of the enlarged node
Lymph Nodes
Ganglia

- Mucoid containing mass surrounded by fibrous tissue
- No synovial lining
- Commonly multilocular
- Tendency to be unilocular when associated with a tendon sheath
- Tend not to be “simple” cystic structures
- Non compressible
Ganglia
Ganglia- pitfalls

• Synovial cyst (histologically different and tend to occur in different anatomical locations)
• Tenosynovitis
• Distended bursa (compressible)
• Any large cystic structure that is not in the expected location of a bursa – think twice!!
Sebaceous Cysts

- Epidermal Inclusion Cysts
- Unilocular
- Lined by squamous cells, encapsulated by fibrous tissues
- Located in the epidermis
- Arise anywhere on the body with hair
- Contain dermal products such as, keratin, cholesterol, protein and cell membrane lipids
Sebaceous Cyst
Retained Foreign Bodies
The Indeterminates!
The Indeterminates!
Miscellaneous!
New Technologies & Future Research

• Contrast
• Elastography
To infinity and beyond!

<table>
<thead>
<tr>
<th>Soft tissue masses which may be painful</th>
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<tbody>
<tr>
<td>• Abscess</td>
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<tr>
<td>• Inflammatory Bursa</td>
</tr>
<tr>
<td>• Ganglion cysts</td>
</tr>
<tr>
<td>• Neural sheath Tumours</td>
</tr>
<tr>
<td>• Thrombosed varicose veins</td>
</tr>
<tr>
<td>• Nodular fasciitis</td>
</tr>
<tr>
<td>• Rapidly growing sarcomas</td>
</tr>
<tr>
<td>• Soft tissue mets</td>
</tr>
</tbody>
</table>
To infinity and beyond!

<table>
<thead>
<tr>
<th>Masses arising from tendons or tendon sheaths</th>
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</thead>
<tbody>
<tr>
<td>• Ganglia</td>
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<tr>
<td>• Rheumatoid nodules</td>
</tr>
<tr>
<td>• Xanthomas</td>
</tr>
<tr>
<td>• Giant Cell Tumours</td>
</tr>
<tr>
<td>• Synovial Chondritis</td>
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<tr>
<td>• Tendon sheath lipomas</td>
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</tbody>
</table>
To infinity and beyond!

Lesions with irregular or poorly defined margins

- Early haematoma
- Abscess
- Pyomyositis
- Aggressive fibromatosis
- Haemangioma
- Infiltrating intramuscular lipomas
- Soft tissue endometriosis
- Soft tissue lymphoma or mets
To infinity and beyond!

**Soft tissue masses which frequently calcify**

**Benign:**
- Myositis ossificans
- Haemangioma
- Fat necrosis
- Soft tissue chondromas
- Leimyomas
- Pilomatricoma

**Malignant:**
- Leiomysarcoma
- Synovial Sarcoma
- Extra skeletal osteosarcoma
- Extra skeletal chondrosarcoma

Tables taken from and adapted: Campbell, 2011
Clinical Ultrasound Vol 2 Chapter 58
Report Writing

• Describe then conclude.
• It's ok to say indeterminate

“Ultrasound cannot predict histology if there are changes in this lesion or ongoing clinical concern further assessment or imaging is advised”

Alison Hall 2016
Conclusions

• Lumps and bumps can be easy!
• Lumps and bumps can be incredibly difficult!
• They are frustrating when we cannot give the diagnosis
• ........But rewarding when we can
• Recognise your limitations and seek advice
References

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