FATTY TUMOURS
LIPOMA

• Age
• Distribution
• Macroscopic
• Microscopic
LIPOMA

- Middle-aged / elderly
- M = F
- Mostly superficial (subcutis), occasionally deep
- Mostly central (rare on face, hands and feet)
- Macroscopic (many show fibrosis, necrosis, myxoid change etc)
DEEP LIPOMAS
INTRAMUSCULAR LIPOMA

• Mostly adults
• M > F
• Large muscles of thigh, shoulder, upper arm.
• Infiltrative growth pattern.
INTRAMUSCULAR LIPOMA

- Differential diagnosis
  - Intramuscular haemangioma
  - Angiomatosis
  - Lipomatosis
  - Atypical lipomatous tumour.
NEURAL FIBROLIPOMA

- Fatty mass in forearm / wrist / hand of young person
- Diffuse infiltration of major nerve, often median nerve.
- One third have macrodactyly.
- Do not excise – peripheral nerve defect.
JOINT LIPOMA
(lipoma arborescens)

- Mostly adults (M > F)
- Most often knee (usually unilateral)
- Occasionally other joints (shoulder, hip, elbow)
- Associated with degenerative joint pathology
- Probably reactive rather than neoplastic
ANGIOLIPOMA

- Age
- Symptoms
- Distribution
ANGIOLIPOMA

- Young adults
- Forearm (trunk, upper arm)
- Painful / tender
- Multiple
LIPOMATOSIS

- Not a discrete fatty mass
- Diffuse overgrowth of mature fat
- May involve subcutis and muscle
- Many subtypes:
  - Diffuse (extremity or trunk)
  - Symmetric (neck, Madelung disease)
  - Pelvic
  - Steroid
  - HIV lipodystrophy (protease inhibitors)
SPINDLE CELL / PLEOMORPHIC
LIPOMA

- Age
- Gender
- Distribution
SPINDLE CELL / PLEOMORPHIC LIPOMA

- Middle-aged / elderly
- M >> F
- Shoulders / posterior neck
- Mostly subcutis
- Occasional dermal or odd site (e.g. oral cavity)
PLEOMORPHIC LIPOMA

- May show features of spindle cell lipoma
- Also shows degenerative nuclear features
- Multinucleated tumour giant cells (floret cells)
- Lipoblasts present
HIBERNOMA

A benign tumour of brown fat
BROWN FAT

• Brown fat – multiple cytoplasmic lipid vacuoles.
• Mainly found in infants / children.
• Disappears / diminishes in adults.
• In children – extensive including interscapular, neck, mediastinum, intra-abdominal, retroperitoneum.
• In adults – around kidneys / aorta, mediastinum, neck.
• Function – heat production.
• Brown – because of increased vascularity and increased mitochondria.
HIBERNOMA
HIBERNOMA

- Mostly adults
- Most commonly thigh
- Mostly subcutaneous
- 10% intramuscular
HIBERNOMA
Differential Diagnosis

- Granular cell tumour
  (both S100 positive)
- Rhabdomyoma
  (desmin / myogenin positive)
LIPOBLASTOMA

• Paediatric form of lipoma (i.e. is benign).
• Mimics liposarcoma.
LIPOSARCOMA and LIPOBLASTS
LIPOBLAST
LIPOBLAST

• Enlarged hyperchromatic nucleus indented by a well-defined cytoplasmic vacuole.
• May be unilocular or multilocular.
• Correct histological context.
LIPOBLAST Mimics

- Fat atrophy
LIPOBLAST Mimics

- Fat atrophy
- Vacuolated macrophages (e.g. silicone)
LIPOBLAST Mimics

- Fat atrophy
- Vacuolated macrophages (e.g. silicone)
- Tumours
LIPOBLASTS

- Liposarcoma
- Pleomorphic lipoma
- Chondroid lipoma
LIPOSARCOMA

LG  • Well differentiated / atypical lipomatous tumour
LG  • Myxoid liposarcoma
HG  • Pleomorphic liposarcoma
LIPOSARCOMA

LG  • Well differentiated / atypical lipomatous tumour

HG  *De-differentiated*

LG  • Myxoid liposarcoma

HG  *Round cell liposarcoma*

HG  • Pleomorphic liposarcoma
ALT/WDLS

- Locally aggressive
- Non-metastasising
ALT / WDLSS

- Atypical fat (± lipoblasts)
- Sclerosis + bizarre stromal cells
ALT / WDLS

- Lipoma-like (fat predominant)
- Sclerosing (sclerosis predominant)
- Inflammatory (lymphocytes + plasma cells)
- Spindle cell (spindle cells predominant)
ALT / WDLS

- Deep
  - retroperitoneal
  - Intramuscular

- Superficial, subcutis
PROGNOSIS

• Retroperitoneum – Poor (recurrence, high-grade transformation)
• Extremities (subcutaneous, IM) - Good
HIGH-GRADE TRANSFORMATION in ALT / WDLS

• De-differentiation
• Non-lipogenic sarcoma (pleomorphic, low-grade, inflammatory MFH-like, myxofibrosarcoma-like, whorling pattern)
• High-grade or low-grade
• Heterologous differentiation (smooth muscle, rhabdomyoblasts)
• Distant metastases (15 to 20%)
• Mortality (25 to 30%)
• Extremity ALT (<2% de-differentiation risk)
• Retroperitoneal ALT / WDLS (>20% risk)
MYXOID LIPOSARCOMA

- Low-grade sarcoma
- Bland oval / short spindle cells
- Lipoblasts
- Vasculature
  - thin-walled capillary
  - plexiform (chicken-wire)
- Myxoid ground substance
ROUND CELL LIPOSARCOMA

- High-grade transformation of MLS
- >5% round cell, worse prognosis
- Increased cellularity
MYXOID LS / ROUND CELL LS

- 2nd most common LS (1/3)
- Young adults (peak in 4\textsuperscript{th} and 5\textsuperscript{th} decades)
- Deep soft tissue
- 2/3 in thigh musculature
- T (12;16) translocations (CHOP; FUS fusion)
- Metastasis in 30-40% of cases (e.g. to retroperitoneum)
DIFFERENTIAL DIAGNOSIS

• Myxoid LS
  – other myxoid tumours especially myxofibrosarcoma
  – Extraskeletal myxoid chondrosarcoma
  – Lipoblastoma

• Round cell LS
  – Other round cell malignancies.
ROUND CELL MALIGNANCY
PLEOMORPHIC LS

- High-grade LS
- Rarest LS subtype (5%)
- Elderly (>50 years)
- Deep soft tissue
- Extremities
- Approximately 40% metastasis, 40% mortality
- Worse prognosis than de-differentiated LS
PLEOMORPHIC LS

- Many pleomorphic lipoblasts
- Pleomorphic spindle cells + occasional lipoblasts
DIFFERENTIAL DIAGNOSIS of PLEOMORPHIC LS

- Pleomorphic spindle cell sarcoma
- De-differentiated LS
LIPOBLASTOMA

- A benign fatty tumour of infants (1st 3 years)
- Superficial or deep
- Lobules – fibrous septa
- In lobules – variable fatty differentiation
- Myxoid sarcoma LS-like areas
- Mature to mature fat
- No 12;16 translocation
DIFFERENTIAL DIAGNOSIS OF LIPOBLASTOMA

• Myxoid LS
• Lipoma