Surgical Oncology:
Malignant Diseases of the Skin, the Lymphatics, and Soft Tissue
Malignant Diseases of the Skin

Basal Cell Carcinoma
Squamous Cell Carcinoma
Melanoma
Skin Lesions

- Skin cancer = Most common cancer in the US.
  - 40% of all new cancers are non-melanoma skin cancers

- Majority of skin lesions are benign.
Characteristics of Malignant Skin Lesions

- Change in pigmentation
- Rapid growth
- Bleeding
- Crusting
- Pain, itching, or other discomfort
- Loss of skin appendages, hair follicles, etc.
- Regional lymphadenopathy
- Serous exudate
- Raised borders
- Central ulceration
BCC & SCC

- > 1 million new cases a year
  - 70% BCC
  - 25% SCC

- Excellent prognosis
  - > 97% cure rate
  - Early diagnosis is key for cure and cosmetic results
  - Metastasis very rare
BCC & SCC

- Incidence increases with age
  - Most patients > 65

- Ultraviolet light exposure is the MOST important risk factor
  - Other sun related lesions are common
    - Wrinkles
    - Telangiectasis
    - Actinic keratosis
    - Solar elastosis
  - Head, neck and hands are common areas
Actinic keratosis
Actinic keratosis
Solar elastosis
Telangectasis
BCC & SCC

Other risk factors
- Chemical exposure
- Cigarette smoking (lip, mouth)
- Chronic burn scars
- Other chronic wounds
- Fair-skinned Caucasians
- Albinism
- Immunosuppression for organ transplantation
- Radiation
Basal Cell Carcinoma

- Arises from the basal layer of the skin or from epithelial appendages (hair follicles, sebaceous glands)
- Slow growth
- Local problem
Basal Cell Carcinoma

- Types
  - Nodular
    - Pearly papule
    - Telangiectases on the surface
    - Ulceration – late presentation
Basal Cell Carcinoma

- Types
  - Nodular
  - Pigmented
  - Similar to nodular but pigmented
  - Dark brown or blue-black color
Basal Cell Carcinoma

- Types
  - Nodular
  - Pigmented
  - Morphealike or fibrosing
    - Indurated yellow plaque
    - Ill-defined borders
    - Scarlike appearance
Basal Cell Carcinoma

- **Treatment**
  - Excision
    - 5 mm margin
    - Anatomically critical areas:
      - 2mm margin
      - Mohs’ surgery
  - Other treatments:
    - Cryo, electrodessication, topical 5-FU

- **Prognosis**
  - >95% cure
  - Close surveillance
    - 20 – 40% will develop new lesion within 1 year.
Squamous Cell Carcinoma

- 75% in the head and neck
  - Lower lip is the most common site

- Consider in non-healing ulcers and chronically damaged skin areas
  - More aggressive than de novo SCC

- Metastasis potential
Squamous Cell Carcinoma

- Hyperkeratotic lesions
- Raised, slightly pigmented lesion
- Central ulceration with necrotic base
- Chronic serous exudate or scab
Squamous Cell Carcinoma

- **Treatment**
  - Excision
    - Small lesion (<1cm) – 0.5 cm margin
    - Large lesion (>1cm) – 1 cm margin
    - Mohs’ surgery

- **Prognosis**
  - Cure rate > 95%
  - SQ involvement = risk of mets = worse prognosis
Melanoma

- 5% of skin cancer but causes 80% of deaths from skin cancer

- Risk factors
  - Age
  - Sun exposure
  - Caucasian
  - Congenital giant hairy nevus
  - Family history
  - Familial atypical mole and melanoma (FAM-M)
  - Hereditary melanoma
  - Previous melanoma
Melanoma

- **Common places**
  - Head, hands
  - Women: extremities
  - Man: Trunk

- **Other locations**
  - Retina
  - Anus
  - Mucosas
Melanoma

- **ABCD rule**
  - A: Asymmetry
  - B: Border
  - C: Color
  - D: Diameter (>6mm)
Melanoma

- Types
  - Lentigo maligna
    - Elderly patients
    - Head and neck (sun exposed areas)
    - Flat
    - Radial growth
    - Least aggressive – good prognosis
    - 10% of all melanomas
Melanoma

- Types
  - Lentigo maligna
  - Superficial spreading
    - Most common type 75%
    - Sun-exposed and nonexposed area
    - Intermediate malignancy
    - Radial and vertical growth
    - Peak incidence in the 5th decade
    - Different colors
Melanoma

- Types
  - Lentigo maligna
  - Superficial spreading
  - Acral lentiginous
    - 5% of melanomas
    - Most common type in African Americans (50%)
    - Palm, soles, subungual and mucous membranes
    - Worse prognosis than superficial spreading
    - Radial and vertical growth
Melanoma

- Types
  - Lentigo maligna
  - Superficial spreading
  - Acral lentiginous
  - Nodular
    - Most aggressive and worst prognosis
    - Vertical growth
    - 15% of all melanomas
    - Blue-black nodule
Melanoma

- **Diagnosis**
  - ABCD
  - Differential diagnosis
    - Other pigmented lesions
  - Biopsy
    - Excisional
    - Incisional
    - Try to include normal tissue
    - DO NOT do shave biopsy
    - Full thickness skin necessary for staging
Melanoma

- Prognostic factors
  - Thickness
  - Ulceration
  - Nodal status
  - Metastases

- Staging
  - TNM
  - Clark system
  - Breslow system
<table>
<thead>
<tr>
<th>Stage</th>
<th>Histological Features/TNM Classification</th>
<th>Overall Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1-year</td>
</tr>
<tr>
<td>0</td>
<td>Intraepithelial/in situ melanoma (TisN0M0)</td>
<td></td>
</tr>
<tr>
<td>IA</td>
<td>≤1 mm without ulceration and Clark Level II/III (T1aN0M0)</td>
<td>95%</td>
</tr>
<tr>
<td>IB</td>
<td>≤1 mm with ulceration or level IV/V (T1bN0M0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.01-2 mm without ulceration (T2aN0M0)</td>
<td>91%</td>
</tr>
<tr>
<td>IIA</td>
<td>1.01-2 mm with ulceration (T2bN0M0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.01-4 mm without ulceration (T3aN0M0)</td>
<td>77%</td>
</tr>
<tr>
<td>IIB</td>
<td>2.01-4 mm with ulceration (T3bN0M0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 4 mm without ulceration (T4aN0M0)</td>
<td>63%</td>
</tr>
<tr>
<td>IIC</td>
<td>&gt; 4 mm with ulceration (T4bN0M0)</td>
<td>45%</td>
</tr>
<tr>
<td>IIIA</td>
<td>Single regional nodal micrometastasis, nonulcerated primary (T1-4aN1aM0)</td>
<td>69%</td>
</tr>
<tr>
<td></td>
<td>2-3 microscopic regional nodes, nonulcerated primary (T1-4aN2aM0)</td>
<td>63%</td>
</tr>
<tr>
<td>IIIB</td>
<td>Single regional nodal micrometastasis, ulcerated primary (T1-4aN1bM0)</td>
<td>63%</td>
</tr>
<tr>
<td></td>
<td>2-3 microscopic regional nodes, ulcerated primary (T1-4aN2bM0)</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>Single regional nodal macrometastasis, nonulcerated primary (T1-4aN1bM0)</td>
<td>59%</td>
</tr>
<tr>
<td></td>
<td>2-3 microscopic regional nodes, nonulcerated primary (T1-4aN2bM0)</td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td>In-transit met(s)/satellite lesion(s) without metastatic lymph nodes (T1-4a/bN2cM0)</td>
<td>30-50%</td>
</tr>
<tr>
<td>IIIC</td>
<td>Single microscopic regional node, ulcerated primary (T1-4aN1bM0)</td>
<td>29%</td>
</tr>
<tr>
<td></td>
<td>2-3 microscopic regional nodes, ulcerated primary (T1-4aN2bM0)</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td>4 or more metastatic nodes, matted nodes/gross extracapsular extension, or in-transit met(s)/satellite(s) and metastatic nodes (anyTN3M0)</td>
<td>27%</td>
</tr>
<tr>
<td>IV</td>
<td>Distant skin, subcutaneous, or nodal mets with normal LDH (any T0aNM1a)</td>
<td>59%</td>
</tr>
<tr>
<td></td>
<td>Lung mets with normal LDH (any T0aNM1b)</td>
<td>57%</td>
</tr>
<tr>
<td></td>
<td>All other visceral mets with normal LDH or any distant mets with increased LDH (any T0aNM1c)</td>
<td>41%</td>
</tr>
</tbody>
</table>
Melanoma

- Treatment
  - Excision
    - Full thickness skin
    - Margins
  - Nodal status assessment
    - Clinically positive – LND
    - Clinically negative
      - <1mm lesion - nothing
      - >1mm lesion - SLND
## PRINCIPLES OF SURGICAL MARGINS FOR WIDE EXCISION OF PRIMARY MELANOMA

<table>
<thead>
<tr>
<th>Tumor Thickness</th>
<th>Recommended Clinical Margins&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>In situ&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.5 cm</td>
</tr>
<tr>
<td>( \leq 1.0 \text{ mm} )</td>
<td>1.0 cm (category 1)</td>
</tr>
<tr>
<td>1.01 - 2 mm</td>
<td>1-2 cm (category 1)</td>
</tr>
<tr>
<td>2.01 - 4 mm</td>
<td>2.0 cm (category 1)</td>
</tr>
<tr>
<td>&gt; 4 mm</td>
<td>2.0 cm</td>
</tr>
</tbody>
</table>

*Margins may be modified to accommodate individual anatomic or functional considerations.*
Melanoma

Treatment
- No effective chemotherapy is available for either primary or metastatic melanoma
- Interferon
- Clinical trials
CLINICAL/PATHOLOGIC STAGE

Stage 0 in situ

FOLLOW-UP

- At least annual skin exam for life
- Educate patient in monthly self skin exam

Stage IA

- H&P (with emphasis on nodes and skin) every 3–12 mo for 5 y then annually as clinically indicated
- At least annual skin exam for life
- Educate patient in monthly self skin and lymph node exam

Stage IB-IV NED

- H&P (with emphasis on nodes and skin)
  - every 3–6 mo for 2 y, then
  - every 3-12 mo for 2 y, then annually as clinically indicated
- Chest x-ray, LDH, CBC every 6-12 mo (optional) (category 2B)
- Routine imaging is not recommended for IB, IIA
- CT scans to follow-up for specific signs and symptoms. Consider CT scans to screen Stage IIIB and higher for recurrent/metastatic disease (category 2B)
- At least annual skin exam for life
- Educate patient in monthly self skin and lymph node exam
Malignant Diseases of the Lymphatics

Hodgkin’s Lymphoma
Non-Hodgkin’s Lymphoma
Lymphomas

- Malignancies from the lymphoid tissues
  - Lymph nodes
  - White pulp of the spleen
  - Waldeyer’s ring (tonsils, lingual tonsil and adenoids)
  - Thymus
  - Peyer’s patches (submucosa GI/respiratory tracts)

- Origin
  - B cells
  - T cells
  - Histiocytes
  - Other lymphoid cells

- Hodgkin’s lymphoma 15%
- Non-Hodgkin’s lymphoma 85%
Hodgkin’s Lymphoma

- Bimodal incidence
  - Late 20’s and mid 70’s

- Etiology and cellular origin uncertain

- Types
  - Nodular lymphocyte predominant
  - Nodular sclerosis
  - Mixed cellularity
  - Lymphocyte depletion
  - Lymphocyte-rich classical HL
Hodgkin’s Lymphoma

- Clinical presentation
  - Asymptomatic cervical lymphadenopathy: 60% - 80%
  - Location
    - Young adults – 90% supradiaphragmatic
    - Older adults – 25% supradiaphragmatic
    - Localized or disseminated
  - B symptoms
    - Fever, night sweats and weight loss
    - Worse prognosis
  - Mass effect on mediastinum or retroperitoneum
<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weakness and shortness of breath,</td>
<td>Lymphoma cells are invading the bone marrow.</td>
</tr>
<tr>
<td>resulting from too few red blood cells</td>
<td></td>
</tr>
<tr>
<td>(anemia)</td>
<td></td>
</tr>
<tr>
<td>Infection and fever, resulting from too few</td>
<td></td>
</tr>
<tr>
<td>white blood cells</td>
<td></td>
</tr>
<tr>
<td>Bleeding, resulting from too few platelets</td>
<td></td>
</tr>
<tr>
<td>Possibly bone pain</td>
<td></td>
</tr>
<tr>
<td>Loss of muscle strength</td>
<td>Enlarged lymph nodes are compressing nerves in the spinal cord or</td>
</tr>
<tr>
<td>Hoarseness</td>
<td>nerves to the vocal cords.</td>
</tr>
<tr>
<td>Jaundice</td>
<td>Lymphoma cells are blocking the flow of bile from the liver.</td>
</tr>
<tr>
<td>Swelling of the face, neck, and upper</td>
<td>Enlarged lymph nodes are blocking the flow of blood returning from</td>
</tr>
<tr>
<td>extremities (superior vena cava syndrome)</td>
<td>the head to the heart.</td>
</tr>
<tr>
<td>Swelling of legs and feet (edema)</td>
<td>Lymphoma cells are blocking the flow of lymph fluid from the legs.</td>
</tr>
<tr>
<td>Cough and shortness of breath</td>
<td>Lymphoma cells are invading the lungs.</td>
</tr>
<tr>
<td>Decreased ability to fight infection and</td>
<td>Lymphoma cells are continuing to spread.</td>
</tr>
<tr>
<td>increased susceptibility to fungal and viral</td>
<td></td>
</tr>
<tr>
<td>infections</td>
<td></td>
</tr>
</tbody>
</table>
Hodgkin’s Lymphoma

- **Workup**
  - H&P
  - CBC, ESR, LDH, LFT’s and BUN/Creat
  - CXR
  - Excisional biopsy
    - Reed-Sternberg cells
  - CT, PET-CT
  - Bone marrow aspirate
  - Staging laparotomy
    - Rarely indicated
    - Stage I or II of nodular sclerosing type and no symptoms referable to HL
Reed-Sternberg cell
“owl eye”
## Stages of Hodgkin Lymphoma

<table>
<thead>
<tr>
<th>Stage</th>
<th>Extent of Spread</th>
<th>Likelihood Of Cure*</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Limited to one lymph node region†</td>
<td>More than 80%</td>
</tr>
<tr>
<td>II</td>
<td>Involves two or more lymph node regions on the same side of the diaphragm, above or below it (for example, some enlarged nodes in the neck and some in the armpit)</td>
<td>More than 80%</td>
</tr>
<tr>
<td>III</td>
<td>Involves lymph node regions above and below the diaphragm (for example, some enlarged nodes in the neck and some in the groin)</td>
<td>70 to 80%</td>
</tr>
<tr>
<td>IV</td>
<td>Involves other parts of the body (such as the bone marrow, lungs, or liver), as well as lymph nodes</td>
<td>More than 50%</td>
</tr>
</tbody>
</table>

*Survival for 5 years with no further disease.
†A lymph node region is an area of the body with groups of lymph nodes that drain lymph fluid.
Hodgkin’s Lymphoma

- **Treatment**
  - Stage I & II – Radiation & chemotherapy
  - Stage III & IV – Chemotherapy

- **Prognosis**
  - Good
  - Risk of leukemia secondary to treatment
Non-Hodgkin’s Lymphoma

- Heterogeneous group of malignancies

- Etiology unknown
  - Immunosuppression: HIV, organ transplantation
  - Virus: EBV, HTLV-1
## Non-Hodgkin’s Lymphoma

### Proposed WHO Classification of Lymphoid Neoplasms

#### B-Cell Neoplasms

- Precursor B-cell neoplasm
  - Precursor B-lymphoblastic leukemia/lymphoma (precursor B-cell acute lymphoblastic leukemia)
- Mature (peripheral) B-cell neoplasms
  - B-cell chronic lymphocytic leukemia/small lymphocytic lymphoma
  - B-cell prolymphocytic leukemia
  - Lymphoplasmacytic lymphoma
  - Splenic marginal zone B-cell lymphoma (± villous lymphocytes)
  - Hairy cell leukemia
  - Plasma cell myeloma/plasmacytoma
  - Extranodal marginal zone B-cell lymphoma of MALT type
  - Nodal marginal zone B-cell lymphoma (± monocytoid B cells)
  - Follicular lymphoma
  - Mantle cell lymphoma
  - Diffuse large B-cell lymphoma
    - Mediastinal large B-cell lymphoma
    - Primary effusion lymphoma
  - Burkitt's lymphoma/Burkitt cell leukemia

#### T-Cell and NK-Cell Neoplasms

- Precursor T-cell neoplasm
  - Precursor T-lymphoblastic lymphoma/leukemia (precursor T-cell acute lymphoblastic leukemia)
- Blastic NK-cell lymphoma/CD4+/CD56+ hematodermic neoplasms
- Mature (peripheral) T-cell neoplasms
  - T-cell prolymphocytic leukemia
  - T-cell granular lymphocytic leukemia
  - Aggressive NK-cell leukemia
  - Adult T-cell lymphoma/leukemia (HTLV1+)<sup>a</sup>
  - Extranodal NK/T-cell lymphoma, nasal type
  - Enteropathy-type T-cell lymphoma
  - Hepatosplenic T-cell lymphoma
  - Subcutaneous panniculitis-like T-cell lymphoma
  - Mycosis fungoides/Sézary syndrome
  - Anaplastic large-cell lymphoma, T/null cell, primary cutaneous type
  - Peripheral T-cell lymphoma, not otherwise characterized
  - Angioimmunoblastic T-cell lymphoma
  - Anaplastic large-cell lymphoma, T/null cell, primary systemic type

<sup>a</sup>HTLV1+ indicates human T-cell leukemia virus.
Non-Hodgkin’s Lymphoma

- Clinical presentation
  - Most patients are asymptomatic
  - B symptoms – 20%
  - Enlarged lymph nodes
  - Symptoms associated with the spread of the disease
<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty in breathing</td>
<td>Lymph nodes in the chest are enlarged.</td>
</tr>
<tr>
<td>Swelling of the face</td>
<td></td>
</tr>
<tr>
<td>Loss of appetite</td>
<td>Lymph nodes in the abdomen are enlarged.</td>
</tr>
<tr>
<td>Severe constipation</td>
<td></td>
</tr>
<tr>
<td>Abdominal pain or distention</td>
<td></td>
</tr>
<tr>
<td>Progressive swelling of the legs</td>
<td>Lymph vessels in the groin or abdomen are blocked.</td>
</tr>
<tr>
<td>Weight loss</td>
<td>Lymphoma cells are invading the small intestine.</td>
</tr>
<tr>
<td>Diarrhea</td>
<td></td>
</tr>
<tr>
<td>Flatulence</td>
<td></td>
</tr>
<tr>
<td>Bloating and cramping (indicating malabsorption—nutrients are not absorbed normally into the blood)</td>
<td></td>
</tr>
<tr>
<td>Shortness of breath</td>
<td>Lymph vessels in the chest are blocked.</td>
</tr>
<tr>
<td>Chest pain</td>
<td></td>
</tr>
<tr>
<td>Cough (indicating fluid accumulation around the lungs, called pleural effusion)</td>
<td></td>
</tr>
<tr>
<td>Symptoms</td>
<td>Cause</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Thickened, dark, itchy areas of skin</td>
<td>Lymphoma cells are infiltrating the skin.</td>
</tr>
<tr>
<td>Weight loss</td>
<td>The disease is spreading throughout the body.</td>
</tr>
<tr>
<td>Fever</td>
<td></td>
</tr>
<tr>
<td>Night sweats</td>
<td></td>
</tr>
<tr>
<td>Fatigue</td>
<td>One or more of the following occurs:</td>
</tr>
<tr>
<td>Shortness of breath</td>
<td>• Bleeding into the digestive tract</td>
</tr>
<tr>
<td>Pale skin (indicating anemia, or too few red blood cells)</td>
<td>• Destruction of red blood cells by an enlarged spleen or by abnormal antibodies</td>
</tr>
<tr>
<td></td>
<td>• Invasion and destruction of bone marrow by lymphoma cells</td>
</tr>
<tr>
<td></td>
<td>• Inability of the bone marrow, damaged by treatment (drugs or radiation therapy), to produce enough red blood cells</td>
</tr>
<tr>
<td>Susceptibility to severe bacterial infections</td>
<td>Lymphoma cells are invading the bone marrow and lymph nodes, reducing antibody production.</td>
</tr>
</tbody>
</table>
Non-Hodgkin’s Lymphoma

Workup
- H&P
- Labs
  - CBC, CMP, LDH
- CT Chest, abdomen and pelvis
- Bone marrow biopsy
- Lumbar puncture in selected cases
Non-Hodgkin’s Lymphoma

<table>
<thead>
<tr>
<th>Stage</th>
<th>Area of Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Single lymph node group</td>
</tr>
<tr>
<td>II</td>
<td>Multiple lymph node groups on same side of diaphragm</td>
</tr>
<tr>
<td>III</td>
<td>Multiple lymph node groups on both sides of diaphragm</td>
</tr>
<tr>
<td>IV</td>
<td>Multiple extranodal sites or lymph nodes and extranodal disease</td>
</tr>
<tr>
<td>X</td>
<td>Bulk &gt; 10 cm</td>
</tr>
<tr>
<td>E</td>
<td>Extranodal extension or single isolated site of extranodal disease</td>
</tr>
<tr>
<td>A/B</td>
<td>B symptoms: weight loss &gt; 10%, fever, drenching night sweats</td>
</tr>
</tbody>
</table>

Non-Hodgkin’s Lymphoma

- **Treatment**
  - Determined by
    - Type
    - Stage
    - Risk of relapse
  - Chemotherapy primary treatment
  - Surgery in some localized forms
  - Radiation in some localized forms
Non-Hodgkin’s Lymphoma

- Prognosis is variable
  - Low-grade tumors are usually indolent
  - Poor prognosis factors
    - Age > 60
    - Poor performance status
    - Elevated LDH
    - >1 extranodal site
    - Stage III and IV
    - B symptoms
    - Bulky disease
<table>
<thead>
<tr>
<th>Hodgkin Lymphoma</th>
<th>Non-Hodgkin Lymphoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Localized to a specific group of nodes</td>
<td>Usually disseminated among more than one nodal group</td>
</tr>
<tr>
<td>Tends to spread in an orderly, contiguous fashion</td>
<td>Spreads noncontiguously</td>
</tr>
<tr>
<td>Does not usually affect Waldeyer’s ring and the mesenteric nodes</td>
<td>Commonly affects the mesenteric nodes and may affect Waldeyer’s ring</td>
</tr>
<tr>
<td>Infrequently involves extranodal sites</td>
<td>Frequently involves extranodal sites</td>
</tr>
<tr>
<td>Usually diagnosed at an early stage</td>
<td>Usually diagnosed at an advanced stage</td>
</tr>
<tr>
<td>In children, usually displays a favorable histologic classification</td>
<td>In children, usually is high grade</td>
</tr>
</tbody>
</table>
SARCOMAS
Soft Tissue Sarcoma

- Non-epithelial tumors
- <1% of all cancers
- Risk factors
  - Occupational exposures
  - Radiation
  - Chronic lymphedema
### TABLE 119.1 SITE OF ORIGIN OF SOFT TISSUE SARCOMAS IN ADULTS

<table>
<thead>
<tr>
<th>Anatomic site</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower extremity</td>
<td>46.4</td>
</tr>
<tr>
<td>Trunk</td>
<td>17.9</td>
</tr>
<tr>
<td>Upper extremity</td>
<td>13.1</td>
</tr>
<tr>
<td>Retroperitoneum</td>
<td>12.5</td>
</tr>
<tr>
<td>Head and neck</td>
<td>8.9</td>
</tr>
<tr>
<td>Mediastinum</td>
<td>1.3</td>
</tr>
<tr>
<td>Histologic type</td>
<td>Percentage</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>------------</td>
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<tr>
<td>Malignant fibrous histiocytoma</td>
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<tr>
<td>Liposarcoma</td>
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<tr>
<td>Leiomyosarcoma</td>
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<td>Fibrosarcoma</td>
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<tr>
<td>Neurofibrosarcoma</td>
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<td>Synovial sarcoma</td>
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<td>Rhabdomyosarcoma</td>
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<td>Extraskeletal chondrosarcoma</td>
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<td>Extraskeletal osteosarcoma</td>
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<td>Other</td>
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</tbody>
</table>
Soft Tissue Sarcoma

- Clinical presentation
  - Incidental finding
  - Mass
  - Symptoms secondary to involvement of adjacent structures
Soft Tissue Sarcoma

- **Workup**
  - H&P
  - CT/MRI
  - Biopsy
    - Incisional
    - Excisional
<table>
<thead>
<tr>
<th>Primary Tumor (T)</th>
<th>Tumor ≤5 cm</th>
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<tbody>
<tr>
<td>T1</td>
<td>T1a Superficial tumor</td>
</tr>
<tr>
<td></td>
<td>T1b Deep tumor</td>
</tr>
<tr>
<td></td>
<td>Tumor &gt;5 cm</td>
</tr>
<tr>
<td>T2</td>
<td>T2a Superficial tumor</td>
</tr>
<tr>
<td></td>
<td>T2b Deep tumor</td>
</tr>
<tr>
<td>Regional Lymph Nodes (N)</td>
<td>No regional lymph node metastasis</td>
</tr>
<tr>
<td>N0</td>
<td>Regional lymph node metastasis</td>
</tr>
<tr>
<td>N1</td>
<td>No distant metastasis</td>
</tr>
<tr>
<td>M0</td>
<td>Distant metastasis</td>
</tr>
<tr>
<td>M1</td>
<td>Well differentiated</td>
</tr>
<tr>
<td>G1</td>
<td>Moderately differentiated</td>
</tr>
<tr>
<td>G2</td>
<td>Poorly differentiated</td>
</tr>
<tr>
<td>G3</td>
<td>Poorly differentiated or undifferentiated</td>
</tr>
<tr>
<td>G4</td>
<td>Stage Grouping</td>
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<tr>
<td>Stage I</td>
<td>T1a, 1b, 2a, 2b</td>
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<td>Stage II</td>
<td>T1a, 1b, 2a</td>
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<td>Stage III</td>
<td>T2b</td>
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<td>N0 M0 G1-2 G1</td>
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<td>N0 M0 G3-4 G2-3</td>
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<td>N1 M0 Any G Any G</td>
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<tr>
<td></td>
<td>N0 M1 Any G Any G</td>
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</tbody>
</table>
Soft Tissue Sarcoma

- Clinical behavior depends on anatomic location, grade, and size
- Locally aggressive
- Metastases
  - Mostly hematogenous, lung is the most common site
  - Lymph node metastases are uncommon
Soft Tissue Sarcoma

Treatment

- Surgery
  - Sarcoma is a surgical disease
  - Clear margin are difficult to obtain
- Chemotherapy: Adjuvant and neoadjuvant
- Radiation
Soft Tissue Sarcoma

- Recurrence
  - 80% will recur within 2 years
  - Re-excision
  - Worse prognosis
  - High re-recurrence rate
  - Radiation in selected cases
Soft Tissue Sarcoma

- Distant disease
  - Isolated lung metastases – resection
  - Poor response to chemotherapy

- Prognosis
  - Variable
    - 5-year survival 20-90%
  - Poor prognostic factors
    - High grade
    - >5cm
    - Deep tumor
    - Positive surgical margin
GIST

- Sarcomas of gastrointestinal neural origin
- Presentation depends on the location
- Treatment
  - Resection
  - Chemotherapy – tyrosine kinase inhibitors
Kaposi’s Sarcoma

- Angiosarcoma
- Types
  - Classic KS
  - African endemic KS
  - Iatrogenic KS
  - AIDS-associated KS
- Presentation
  - Flat, blue lesion – hematoma like.
  - Raised, rubbery nodules – late presentation
  - Non-AIDS KS – lower extremities
Kaposi’s Sarcoma

- **Classic KS**
  - Very rare
  - M:F 10:1
  - Age 50 – 70
  - Mediterranean and Jewish origin
  - Asymptomatic, single lesion in lower extremities
  - 1/3 will develop another malignancy, usually Non-Hodgkin’s lymphoma
Kaposi’s Sarcoma

- African endemic KS
  - Similar to classic form but earlier presentation
  - Two presentations
    - Indolent
    - Aggressive
      - LN and visceral organ involvement
      - 100% mortality in 3 years
Kaposi’s Sarcoma

- Iatrogenic KS
  - Immunosuppression for solid organs
  - Decreased incidence with current medications
  - Treatment: decrease immunosuppression
Kaposi’s Sarcoma

- AIDS-related KS
  - >95% cases in the US have been in homosexual or bisexual men
  - Perioral mucosa
  - Multifocal
    - Multiple skin lesion
    - GI tract: Weight loss, abdominal pain, GI bleed, obstruction
    - Respiratory system: SOB, cough, chest pain, etc.
    - Other symptoms depend on organ involved
  - Patients died of disseminated KS or opportunistic infections
Kaposi’s Sarcoma

- Diagnosis
  - H&P
  - Visceral screening
    • Symptom-guided: EGD, C-Scope, Bronchoscopy
Kaposi’s Sarcoma

**Treatment**
- HAART in AIDS patients
- Small localized lesion
  - Surgery
  - Radiation
- Intralesional chemotherapy
- Advances cases – Chemotherapy