Hematologic Malignancies

Leukemias
- Acute leukemias
- Chronic leukemias

Lymphomas
- Hodgkin lymphoma
- Non-Hodgkin lymphoma

Plasma cell disorders
- Multiple myeloma

Leukemias
- Acute leukemias
- Chronic leukemias

Hematologic Malignancies

Chronic myeloid leukemia
- Malignant proliferation of myeloid cells (not blasts, but maturing cells) in blood, bone marrow
- Four disorders; CML most important
- Occur only in adults
- Long course

Chronic myeloid leukemia
Chronic lymphocytic leukemia

Things You Must Know
Chronic Myeloid Leukemia

Things You Must Know

- Neutrophilic leukocytosis
- Basophilia
- Philadelphia chromosome
- Three phases

All cases of CML have the Philadelphia chromosome!
All cases of CML have the Philadelphia chromosome! 

Normal chromosomes  Chromosomes in CML

9  22  t(9;22)  BCR-ABL fusion gene

Phases of CML

Chronic phase
- Stable counts (Hgb, WBC, platelets)
- 3-4 years (without therapy)

Accelerated phase
- Unstable counts
- Fatal within months

Blast crisis
- Lots of blasts (basically, acute leukemia!)
- Fatal within weeks

Treatment and Prognosis of CML

Treatment
- Used to be bone marrow transplant
- Now, imatinib (Gleevec)

Prognosis
- Median survival used to be 5-6 years
- Now: ??

Other Myeloproliferative Disorders

Polycythemia vera
- Tons of red cells in marrow, blood
- Must rule out benign polycythemia!

Essential thrombocythemia
- Tons of platelets in marrow, blood
- Must rule out benign thrombocytosis!

Chronic myelofibrosis
- Marrow is fibrotic; blood has teardrop red cells
- Patients have extramedullary hematopoiesis
Chronic myelofibrosis: teardrop red cells in blood

Polycythemia vera: ↑↑↑ red cells in blood

Essential thrombocythemia: ↑↑↑ platelets in blood

Chronic Lymphoproliferative Disorders

Things You Must Know
- Malignant proliferation of lymphocytes in blood, bone marrow
- Many disorders; CLL most important
- Occur only in adults
- Long course; indolent but incurable

Chronic Lymphocytic Leukemia

Things You Must Know
- Most common leukemia in adults
- Small, mature B lymphocytes
- Weird immunophenotype: CD5+
- Decreased normal immunoglobulins
Hematologic Malignancies

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Non-Hodgkin Lymphoma

Things you must know
- Malignant proliferation of lymphocytes that starts in lymph nodes
- Skips around
- Many different types
- Prognosis depends on specific type

Symptoms of NHL

- Painless, firm lymphadenopathy
- Extranodal manifestations
- “B” symptoms: weight loss, night sweats, fever

Causes of lymphadenopathy

- Most common cause overall: benign reaction to infection
- Most common malignant cause: metastatic carcinoma
Low-grade lymphomas
Composed of small, mature, slowly-growing cells.
- Follicular lymphoma
- MALT lymphoma
- Mycosis fungoides

High-grade lymphomas
Composed of big, ugly, aggressive cells.
- Large-cell lymphoma
- Burkitt lymphoma

• Follicular lymphoma
• MALT lymphoma
• Mycosis fungoides

• Large-cell lymphoma
• Burkitt lymphoma

Things you must know
- Follicular pattern
- “Butt” cells in blood
- Grading is important for prognosis!
- t(14;18)

Follicular lymphoma: back to back follicles

Follicular lymphoma: three grades

Grade I
- Mostly small cells
- Relatively good prognosis

Grade II
- Small and large cells
- Relatively poor prognosis

Grade III
- Mostly large cells
- Relatively poor prognosis

Staging and Prognosis of Follicular Lymphoma

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
<th>5-year Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Single node</td>
<td>90%</td>
</tr>
<tr>
<td>II</td>
<td>Two or more nodes on same side of diaphragm</td>
<td>90%</td>
</tr>
<tr>
<td>III</td>
<td>Lymph nodes on both sides of the diaphragm</td>
<td>40%</td>
</tr>
<tr>
<td>IV</td>
<td>Diffuse extranodal involvement</td>
<td>40%</td>
</tr>
</tbody>
</table>

A = no additional symptoms
B = weight loss, night sweats, fever
MALT Lymphoma

Things you must know

- Occurs in mucosa-associated lymphoid tissue
- Associated with Helicobacter pylori
- Early on, can be cured with antibiotics

Mycosis Fungoides/Sézary Syndrome

Things you must know

- Skin lesions
- Blood involvement
- Cerebriform lymphocytes
- T-cell immunophenotype

Raised, nodular skin lesions

Pautrier microabscesses

Diffuse Large-Cell Lymphoma

Things you must know

- Most common type of NHL
- Large B cells
- Extranodal involvement
- Bad prognosis

Cerebriform lymphocytes
“Diffuse” pattern = just sheets of cells, no follicles

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Large lymphoma cells

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Burkitt Lymphoma

Things you must know

• Children, young adults
• Often presents with extranodal mass
• Fast-growing and aggressive
• Starry-sky pattern

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Burkitt lymphoma

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Starry-sky pattern

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Burkitt lymphoma

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Hodgkin Lymphoma

Things you must know
• Younger patients, good prognosis
• Contiguous, predictable spread
• Reed-Sternberg cell
• Several subtypes

Multiple Myeloma

Things you must know
• Malignant proliferation of plasma cells
• Monoclonal gammopathy
• Decreased normal immunoglobulins
• Osteolytic lesions

Clinical Features of Multiple Myeloma
• Weakness
• Infections
• Renal failure
• Bone pain
• Hypercalcemia
Treatment of Multiple Myeloma

- Chemo and radiation
- Bone marrow transplant
- 5 year survival with chemo only: 20%