LYMPHOMA

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no disclosures

- Solid neoplasm of the immune system characterized by uncontrolled proliferation of cells residing in the lymphoid tissues
- 2016 WHO revised classifications: 93 types

- HODGKIN DISEASE
- ALL OTHER LYMPHOMAS

NONHODGKIN LYMPHOMA (NHL): WHO CLASSIFICATION

- Low grade: Small lymphocytic and follicular small cleaved/follicular mixed. Affecting older people, presenting in advanced stage, indolent but incurable.
- Lymph nodes can wax and wane for years
- Survival of untreated disease-years

NHL: WHO CLASSIFICATION

- Aggressive (formerly known as Intermediate grade): follicular large cell, diffuse small cleaved/diffuse mixed/diffuse large cell.
- Firm, enlarging mass, +/- B symptoms
- Survival of untreated disease-months

NHL: WHO CLASSIFICATION
CLASSIFICATION

- High grade/Highly Aggressive: Immunoblastic, small non-cleaved, lymphoblastic, Burkitts. Wide age range, variable stage, 30-40% long-term remission with intensive treatment.
- Rapidly enlarging lymph node mass
- Survival of untreated disease-weeks

- Lymph node biopsy to evaluate architectural and cytologic features as well as adequate enough to do immunophenotyping.

- FINE NEEDLE ASPIRATE IS INADEQUATE!

NHL: DIAGNOSIS

- Laboratory: CBC, diff, CMP, LDH, SPEP, B2-microglobulin
- Radiography: CT chest/abdomen/pelvis
- PET
- Bone marrow biopsy
- LP with CSF analysis in pts with sinus, epidural, testis dz or those prone to have circulating tumor cells-Burkitts, lymphoblastic

ANN ARBOR STAGING SYSTEM

STAGING

I Involvement of 1 lymph node or 1 extralymphatic site (IE)

II Involvement of 2 or more lymph node regions or localized extralymphatic disease and involved lymph nodes on the same side of the diaphragm (IIE)

III Involvement of lymph node regions on both sides of the diaphragm, +/- localized extralymphatic disease (IIIE), spleen (IIIS), or both (IIIES)

IV Diffuse or disseminated involvement of 1 or more extralymphatic organs or tissues with or w/o LN involvement

A Asymptomatic

B Fever, night sweats and/or unexplained weight loss of 10% or more of body weight in past 6 months

Only used for Hodgkin lymphoma

Treatment

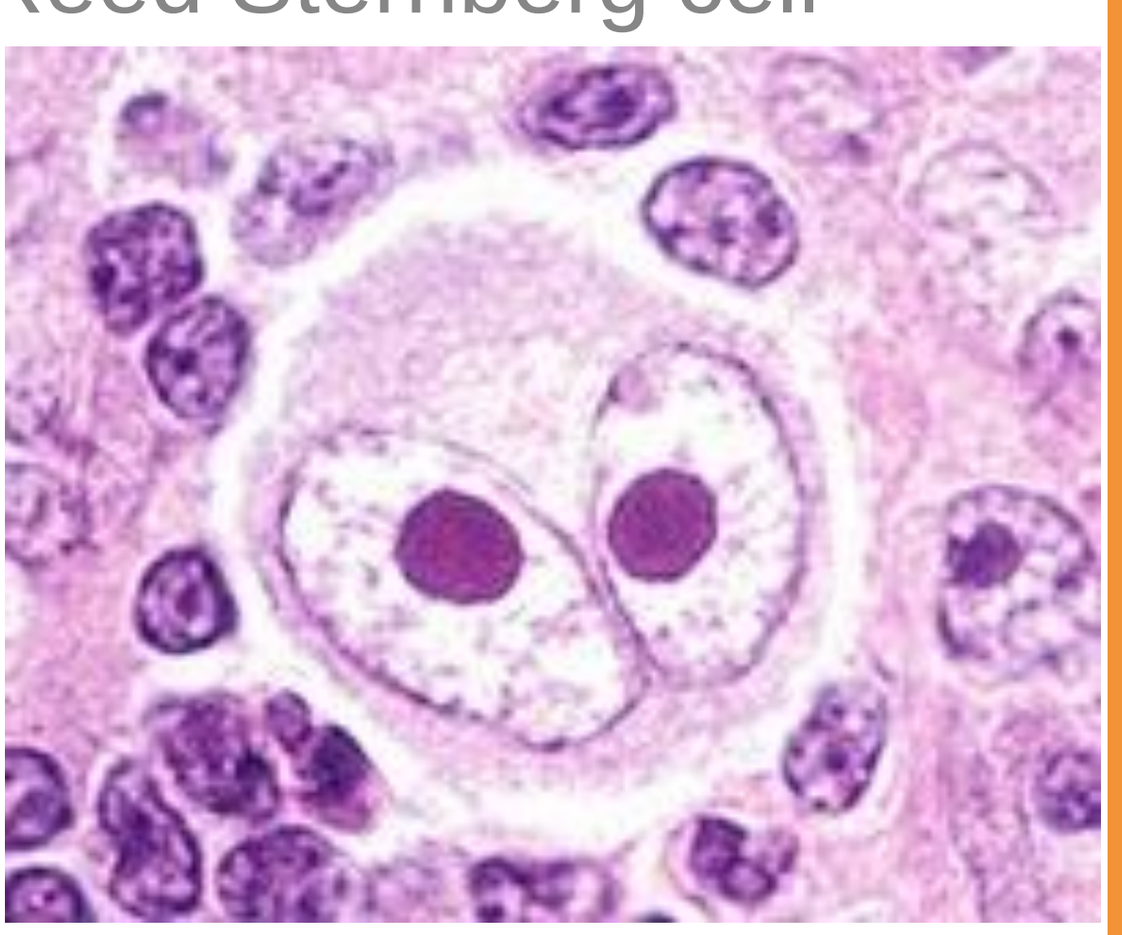
- Rituxan is added to treatment of B cell lymphoma that is CD 20 positive
- Low grade: Rituxan, bendamustine, CVP, CHOP
- Agressive grade: R-CHOP (cytoxan, adriamycin, oncovin, prednisone)
- Highly aggressive: Hyper CVAD, high dose methotrexate

HODGKIN DISEASE

- 1% of all malignancies in US
- First malignancy to demonstrate curative potential of combination chemotherapy
- Most common in young adults; bimodal peak in 3rd and 7th decades
- Association with Epstein-Barr virus
- Arises from B lymphocytes

- Differentiated from other lymphomas by the presence of large binucleate or multinucleate cell, Reed Sternberg cell

(Giant “owl eyes”)



HODGKIN DISEASE

- Nodes are painless and rubbery, most commonly found in neck and mediastinum
- Most common etiology of mediastinal mass in young person
- Unusual symptoms of pruritus, alcohol-induced pain in involved lymph node sites, sweats, fevers; intermittent “Pel-Ebstein” fever rare

HD: HISTOPATHOLOGIC SUBTYPES

- Lymphocyte Predominant
- Nodular Sclerosis
- Mixed Cellularity
- Lymphocyte Depleted

- Nodular lymphocyte predominant

HD: POOR PROGNOSTIC FACTORS

- Advanced Stage
- Large mediastinal mass (ratio>0.33)
- Systemic symptoms
- Extra nodal disease
- Advanced age
- Male sex

HD: TREATMENT

- Favorable Stage I and IIA: 2-4 cycles chemotherapy and involved field RT
- Limited HD with risk factors: Full chemotherapy & involved field RT
- Advanced HD: Full chemotherapy and RT only for pts with bulky mediastinal disease
- Bone marrow transplant usually considered after first relapse
- ABVD is standard regimen (adriamycin, bleomycin, vinblastine, dacarbazine)

HD: LATE EFFECTS OF TREATMENT

- Mantle RT: hypothyroid, heart disease
  lung & breast cancer
- Para-aortic or splenic: gastric cancer
- MOPP chemotherapy: acute leukemia
  sterility

HODGKINS SURVIVAL

- STAGE
- IA-IIA 80-90 %
- IB-IIB 80-85 %
- IIIA 75-80 %
- IIIB 60%
- IVA-B 60%

MULTIPLE MYELOMA

no disclosures

PLASMA CELL DISORDERS

- Multiple Myeloma
- Monoclonal Gammopathy of Undetermined Significance (MGUS)
- Smoldering Multiple Myeloma (SMM)
- Solitary Plasmacytoma
- Waldenstrom's Macroglobulinemia
- Amyloidosis
- POEMS

MULTIPLE MYELOMA: CLINICAL PRESENTATION

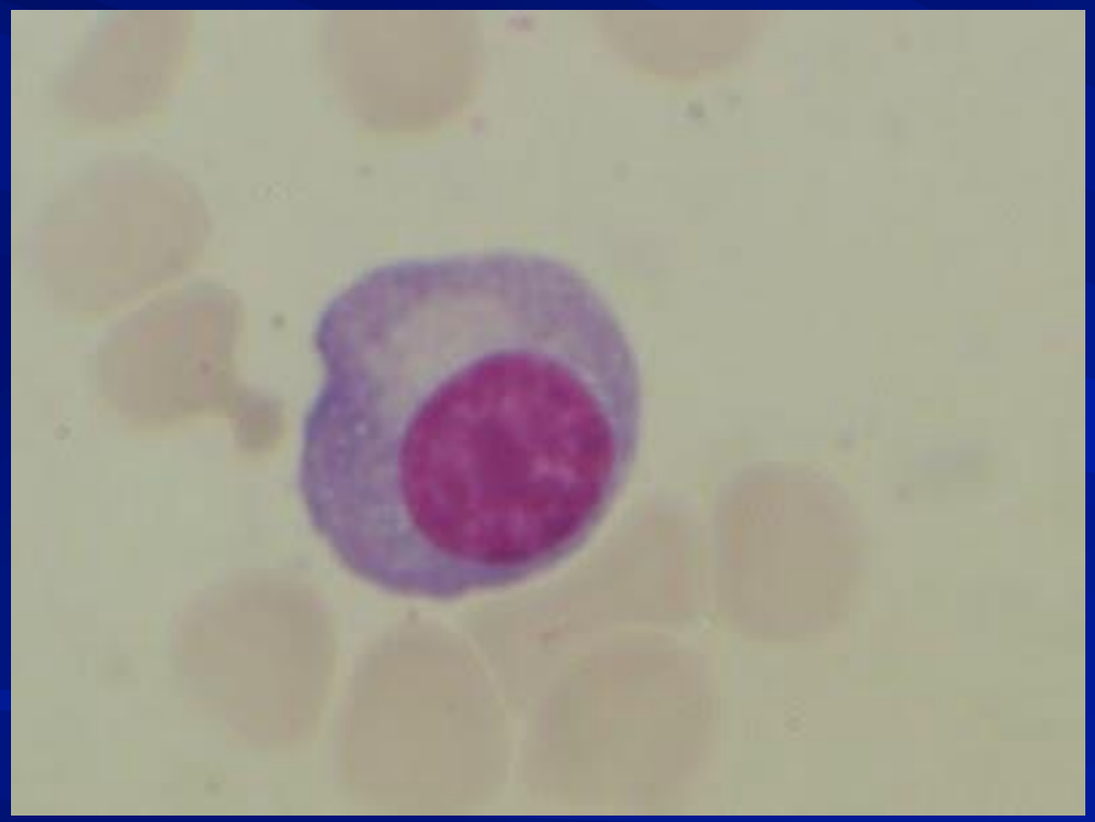
- Weakness and fatigue
- Bone pain
- Fractures
- Infection
- Renal failure
- Hypercalcemia

MULTIPLE MYELOMA: CLINICAL PRESENTATION

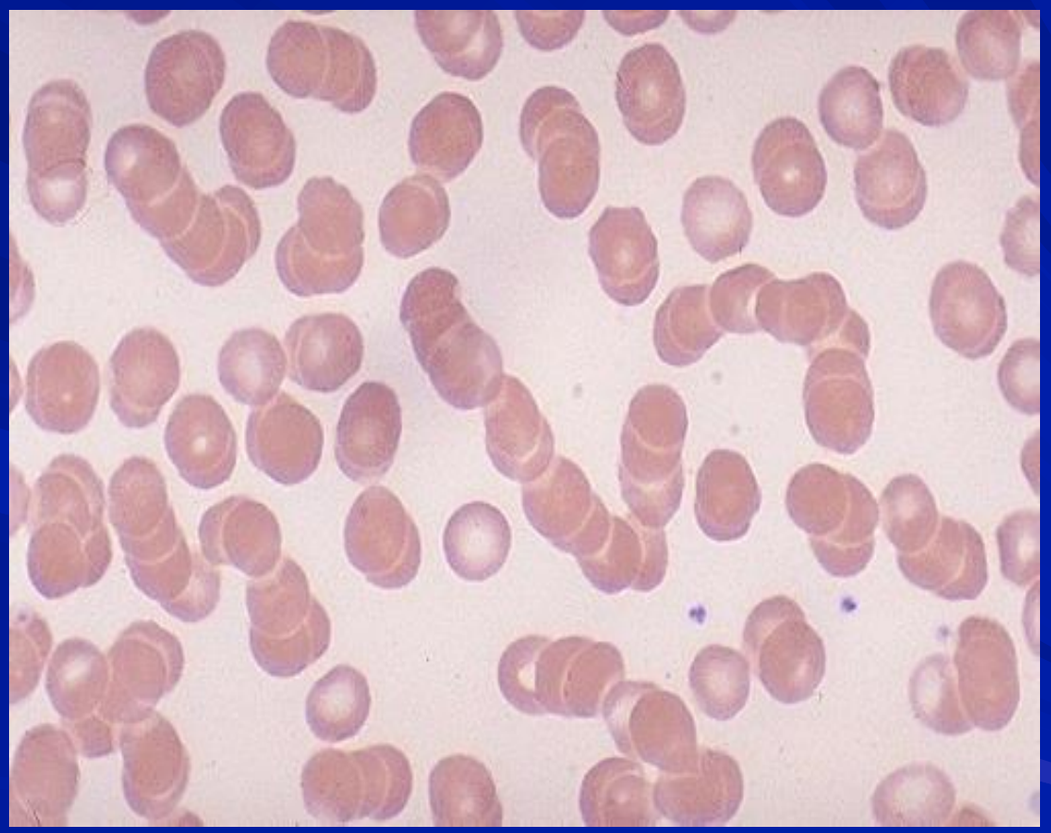
- Plasma cells in bone marrow-96%
- Monoclonal (M) Protein-93%
- Anemia-73%
- Lytic Bone Lesions-67%
- Renal insufficiency SCr ≥2-19%
- Hypercalcemia ≥11-13%

MULTIPLE MYELOMA

Plasma cell



Rouleux formation



M PROTEIN IN MYELOMA

- IgG (50%)
- IgA (20%)
- Light chain only (20%)
- Rarely IgD (2%)

MYELOMA WORK-UP

- Serum Protein Electrophoresis (SPEP) only identifies an M spike
- Immunofixation (IFX) identifies type and clonality (kappa/ lambda)
- 24 hour urine for PEP and IFX
- Skeletal survey
- Bone marrow biopsy
- CBC, serum creatinine, calcium, CMP
- B-2 microglobulin

MYELOMA DIAGNOSIS

- Evidence of monoclonal plasma cell disorder in serum or bone marrow
- Plus at least one or more of the following:

-Renal insufficiency

-Lytic bone lesions

-Anemia

-Hypercalcemia

MYELOMA: TREATMENT

- Melphalan / Prednisone: avoid melphalan if transplant candidate
- Revlamid +/- Decadron
- Velcade +/- Decadron
- Traditional chemotherapy
- Stem cell transplant
- Bisphosphonates

MGUS

- M spike < 3 grams and
- Plasma cells in bone marrow <10%
- No anemia or bone lesions
- Normal calcium and kidney function

SMM

- M spike >3 grams OR
- Bone marrow plasma cells >10%
- No anemia or bone lesions
- Normal calcium and kidney function

SOLITARY PLASMACYTOMA

- Single bony or extramedullary lesion
- M protein may be present
- Bone marrow: Negative
- Treatment: Radiation
- Median survival: 10 years
- 55% later develop myeloma

WALDESTROMS MACROGLOBULINEMIA

- AKA Lymphoplasmacytic lymphoma,
- A type of NHL which produces large amounts of abnormal proteins/macroglobulin

WALDENSTROM'S MACROGLOBULINEMIA

- IgM in serum
- Lymphoplasmacytoid appearance of cells in the marrow
- Adenopathy
- Hyperviscosity syndrome

WALDENSTROMS MACROGLOBULINEMIA

- Treatment

  Rituximab/Bendamustine

  Bortezamide increases risk of peripheral neuropathy

- Plasmapheresis if symptomatic hyperviscosity syndrome

AMYLOIDOSIS

- Group of diseases characterized by deposition of insoluble protein in organs and tissues resulting in organ dysfunction; classification based on the precursor proteins that form fibril deposits
- Diagnosis requires presence of amyloid fibers, typically in fat pad aspirate, stained with Congo Red reveals apple green birefringence under polarized light

AMYLOIDOSIS

Consider diagnosis if:

- Non-diabetic nephrotic syndrome
- Non-ischemic cardiomyopathy with an echo showing LVH
- Hepatomegaly or alk phos elevation without imaging abnormality
- Peripheral neuropathy with MGUS or CDP with autonomic features
- Atypical myeloma monoclonal light chains in urine and modest marrow plasmacytosis

AMYLOIDOSIS

- Primary (AL) (light chain)
- Familial (mutated TTR)
- Secondary (SAA; protein A)
- Senile (unmutated TTR)
- Dialysis associated (beta 2-microglob)

AMYLOIDOSIS

- Primary: Fibrils are Ig light chains (AL)
  Deposited in heart, tongue, GI tract and skin. 21% have MM
- Secondary: Fibrils are protein A (AA)
  Deposited in liver, kidney and skin.
- Treatment: No FDA approved treatments
  bortezomid/dexamethasone, bendamustine
  Stem cell transplant

POEMS SYNDROME

- Overproduction of light chains, usually lambda, without significant plasma cells in marrow, many organ systems involved

POEMS SYNDROME

- Polyneuropathy-usually sensory
- Organomegaly-liver and spleen most common
- Endocrinopathies
- M protein
- Skin changes-hypertrichosis, thickening
- Sclerotic bone lesions

MYELODYSPLASTIC SYNDROME

NO DISCLOSURES

MDS

- Heterogeneous group of clonal stem cell disorders with a variable clinical course
- Characterized by proliferation and ineffective maturation of hematopoietic precursors
- Results in pancytopenia
- Incidence increases with age

MDS ETIOLOGY

- TOXIC EXPOSURE: Smoking, Benzene
- SECONDARY-THERAPY RELATED: Chemo, RT
- INHERITED DISORDERS - Fanconi anemia
- DE NOVO

MDS ABNORMALITIES

QUANTITATIVE	QUALITATIVE
Anemia	Abnormal RBC
Neutropenia	Impaired neutrophil function
Thrombocytopenia	Impaired platelet function
Monoclonal Protein	
Autoimmune Features	Impaired immune regulatory function

MDS WHO CLASSIFICATION, 2008

- Refractory cytopenia with unilineage dysplasia
- Refractory cytopenias with multilineage dysplasia
- Refractory Anemia with Ringed Sideroblasts
- Refractory Anemia with Excess Blasts (RAEB-1 5-9%; RAEB-2 10-19% blasts)
- 5q- syndrome
- Unclassifiable
- Childhood MDS

MDS CYTOGENETICS

- Very Favorable: del(11q), -Y
- Favorable: 5q-, 20q-, normal
- Intermediate: Trisomy 8
- Unfavorable: Monosomy 7, 7q-, Multiple

MDS PROGNOSTIC FEATURES

- Percent Blasts
- Cytogenetics
- Number of Cell Lines Involved
- Age
- Primary vs. Secondary

MDS TREATMENT

- Erythropoietin (epoetin [Procrit], darbepoetin [Aranesp])
- Azacitidine (Vidaza)
- Decitabine (Dacogen)
- Lenalidomide (Revlamid) for 5q- syndrome only
- Bone Marrow/Stem Cell Transplant

THANK YOU!

Any questions…please call me: 248.210.7669