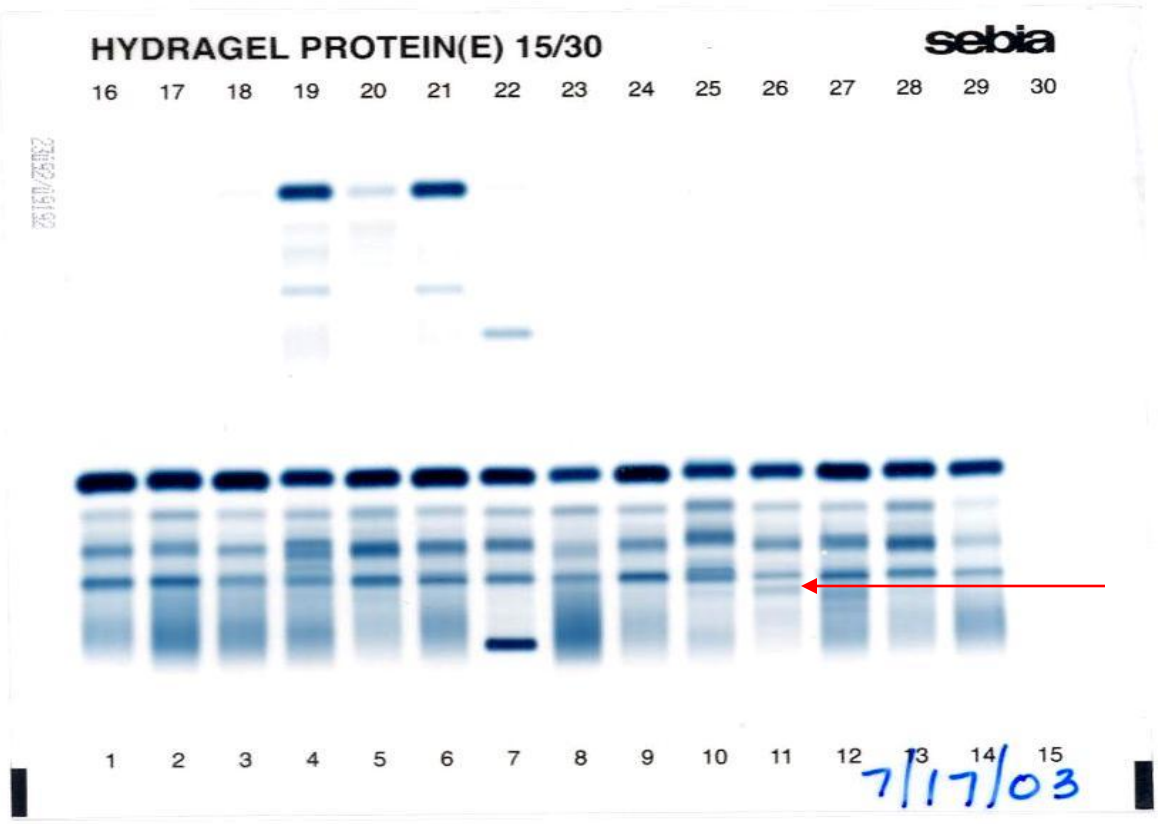
Hematology Case Conference

8/5/03

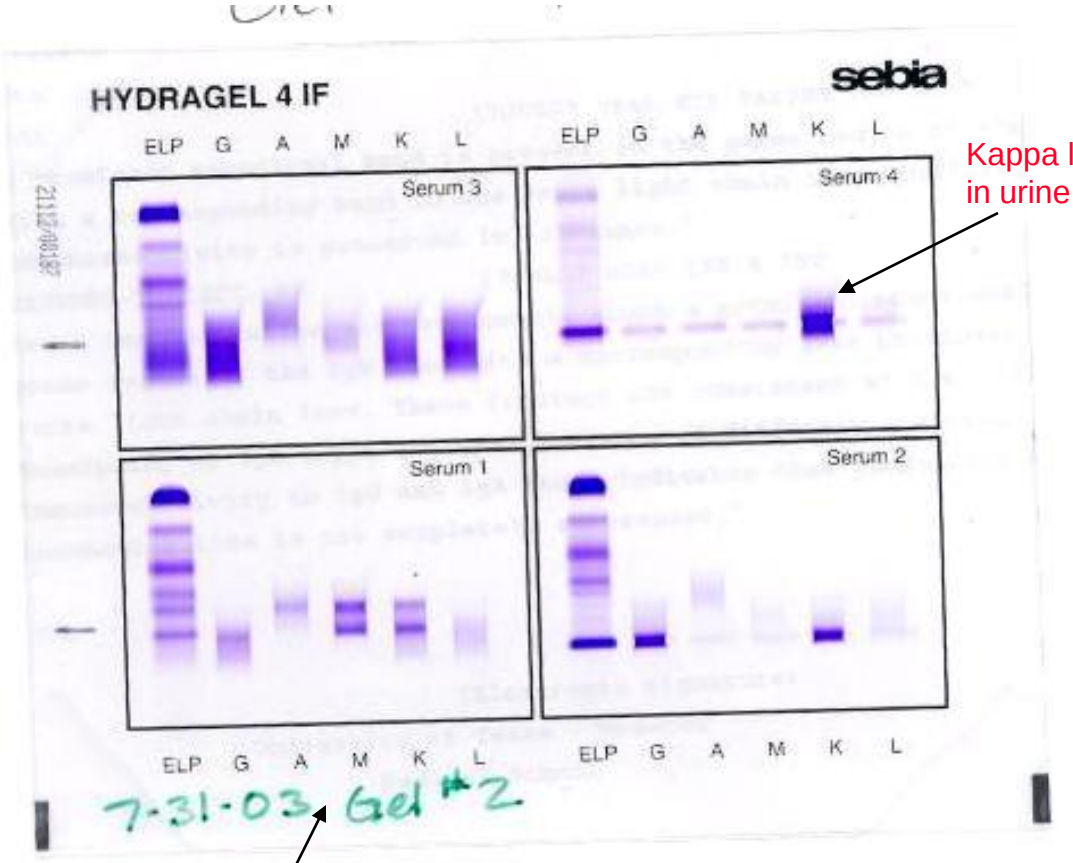
Bone Marrow Case
Patient: Emmxxx Lylexxx

- 74 year old AA female S/P craniotomy for SDH. Pt has Hx of HTN, DM, Crohn's disease, (R) nephrectomy. Bone marrow for abnormal SPE, immunofixation
- WBC= 7.4, Hgb=9.1, Plt=260, Retic 2.1%
  Seg 72, Lymph 19
- Immunoglobulins:
  IgG 394 mg/dl (ref 694-1618)
  IgM 459 mg/dl (ref 60-263)
  IgA 138 mg/dl (ref 68-378)
- Beta-2 microglobulin 4,000 ng/ml (ref 1030-2320)
- Serum viscosity= 1.7 (ref 1.4 - 1.8)

Serum Protein Electrophoresis (lane 11)



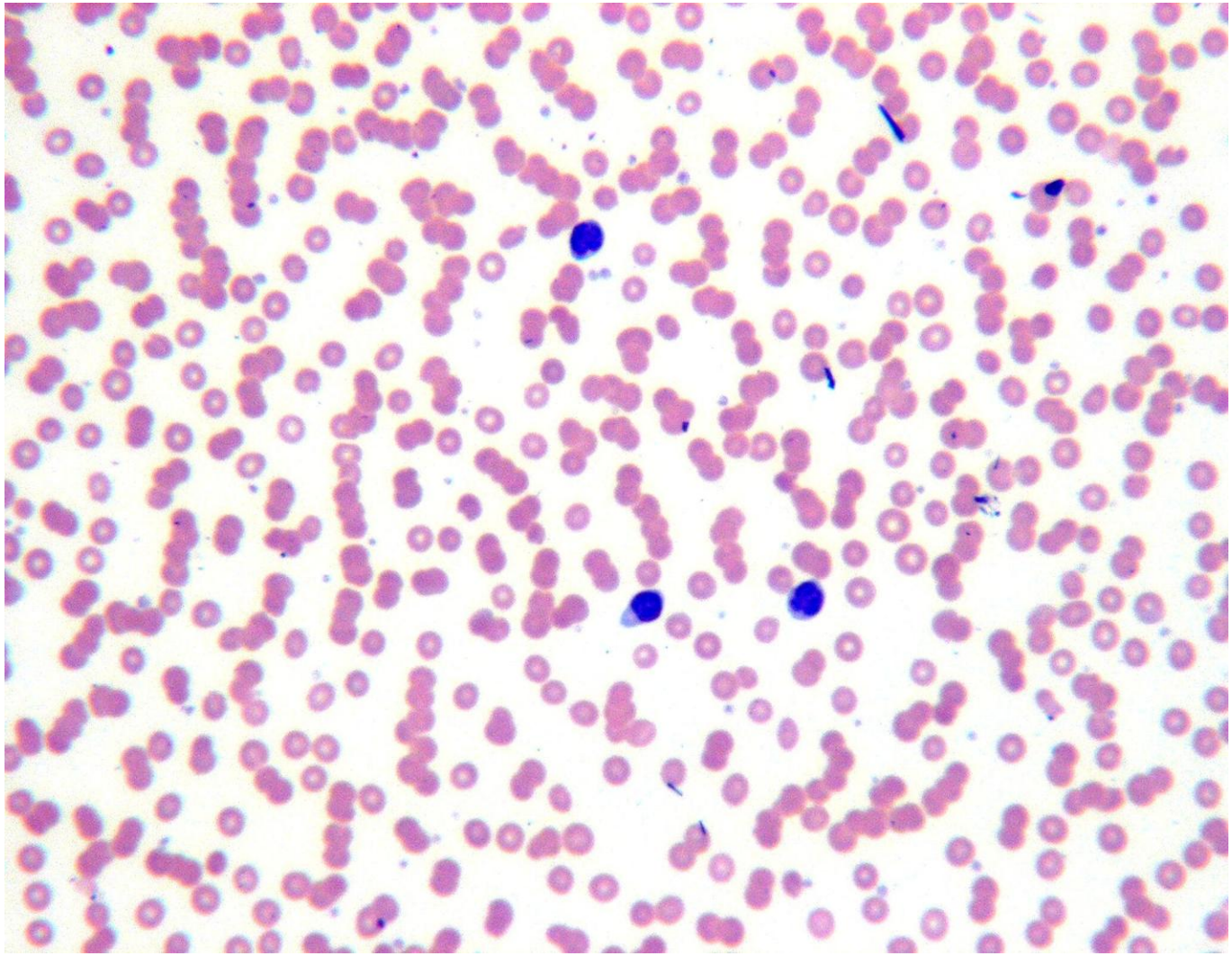
Serum Protein Immunofixation



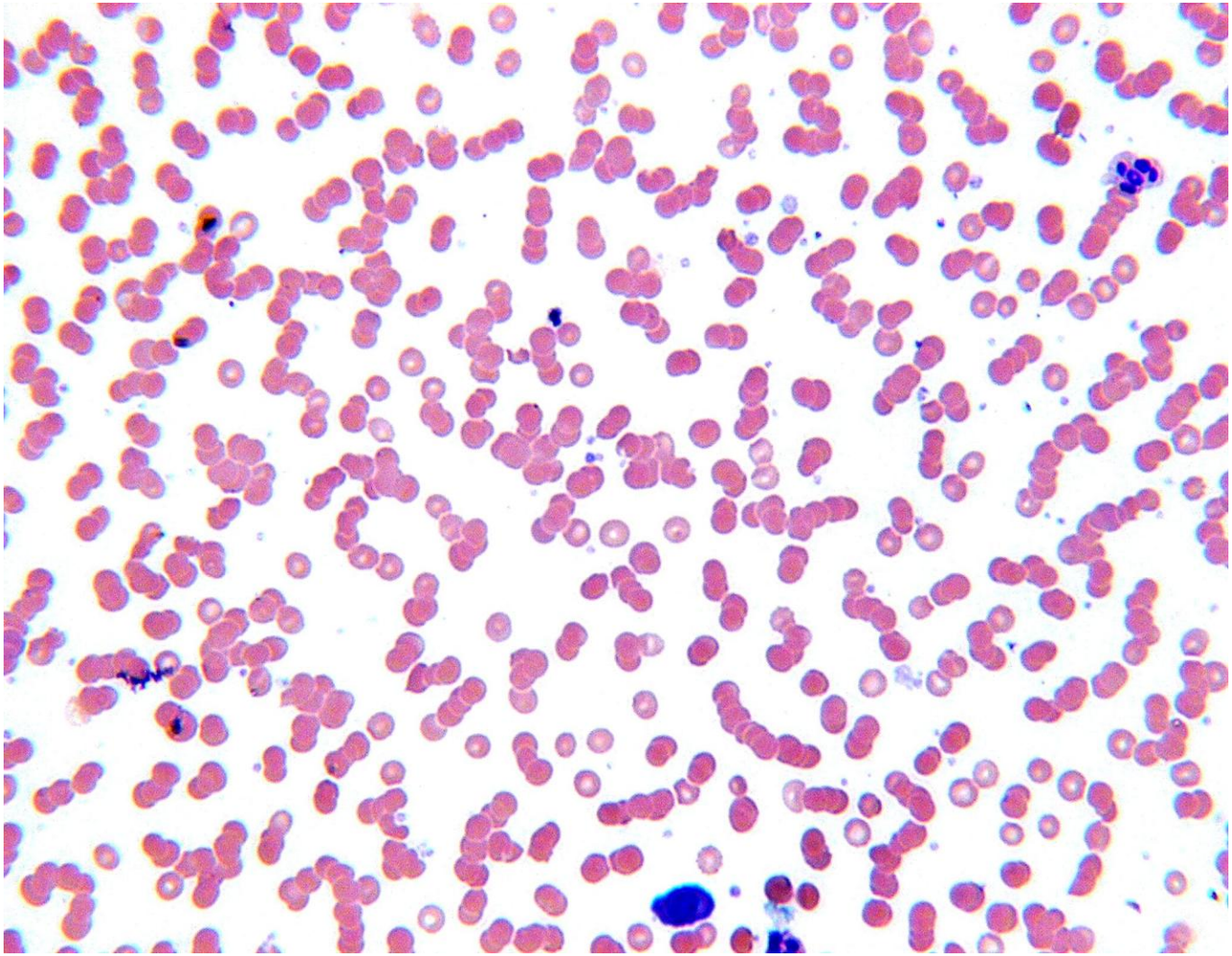
Kappa light chain in urine

Serum:
IgM-Kappa x 2
IgG-Kappa
IgA-Kappa

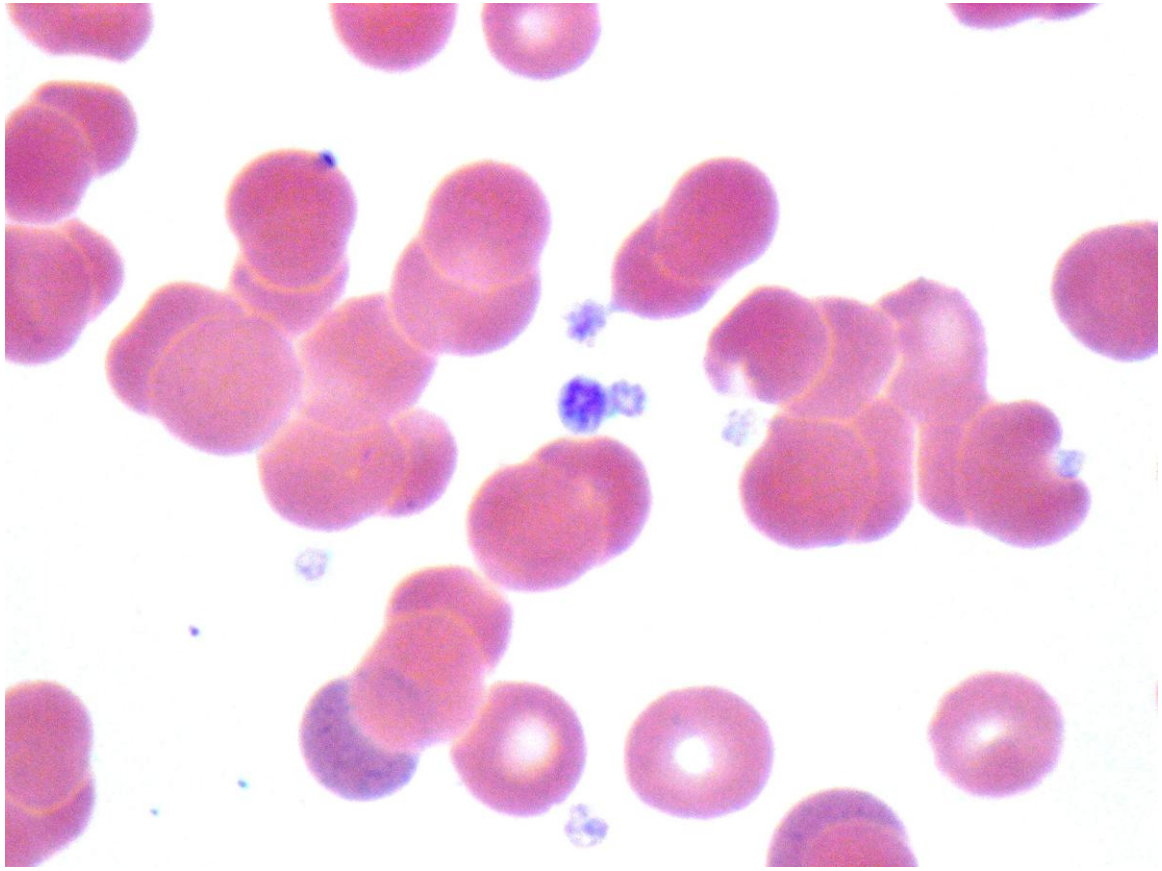
Peripheral Blood Smear



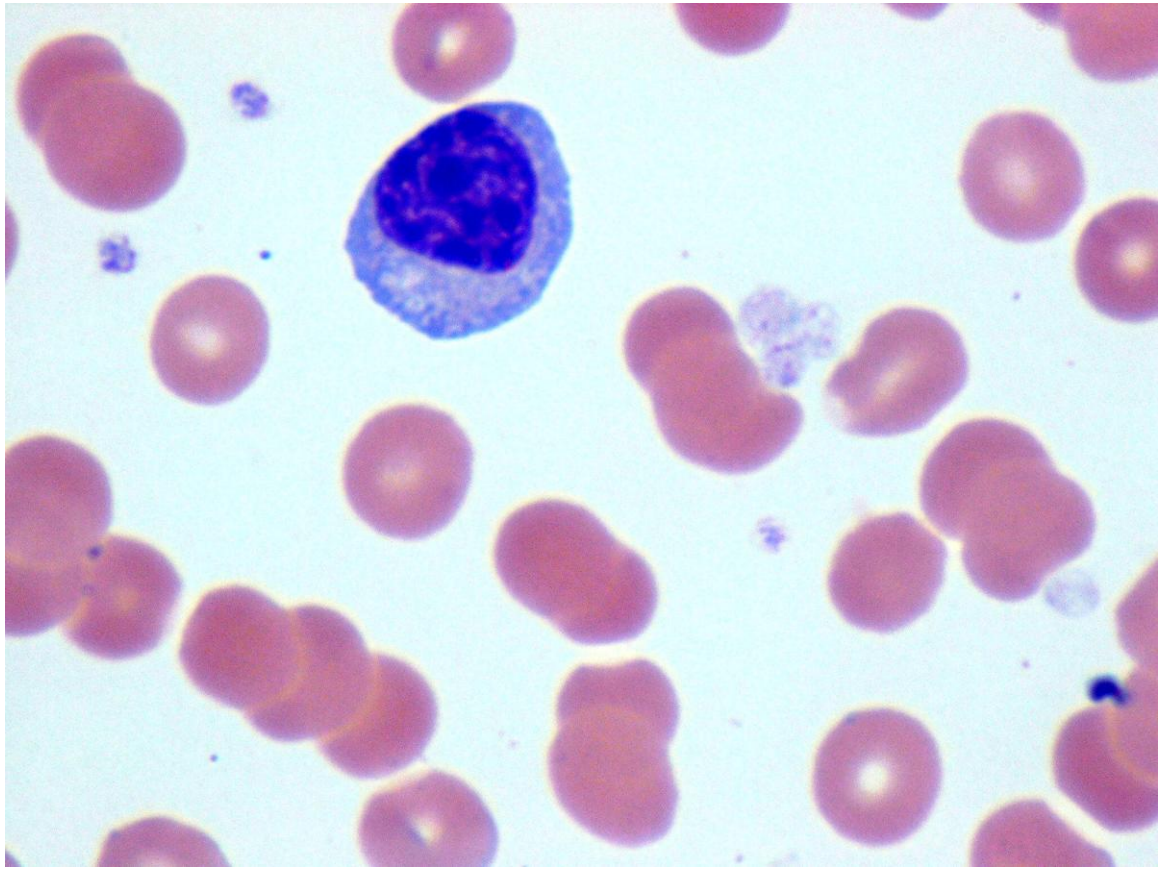
Peripheral Blood Smear (cont'd)



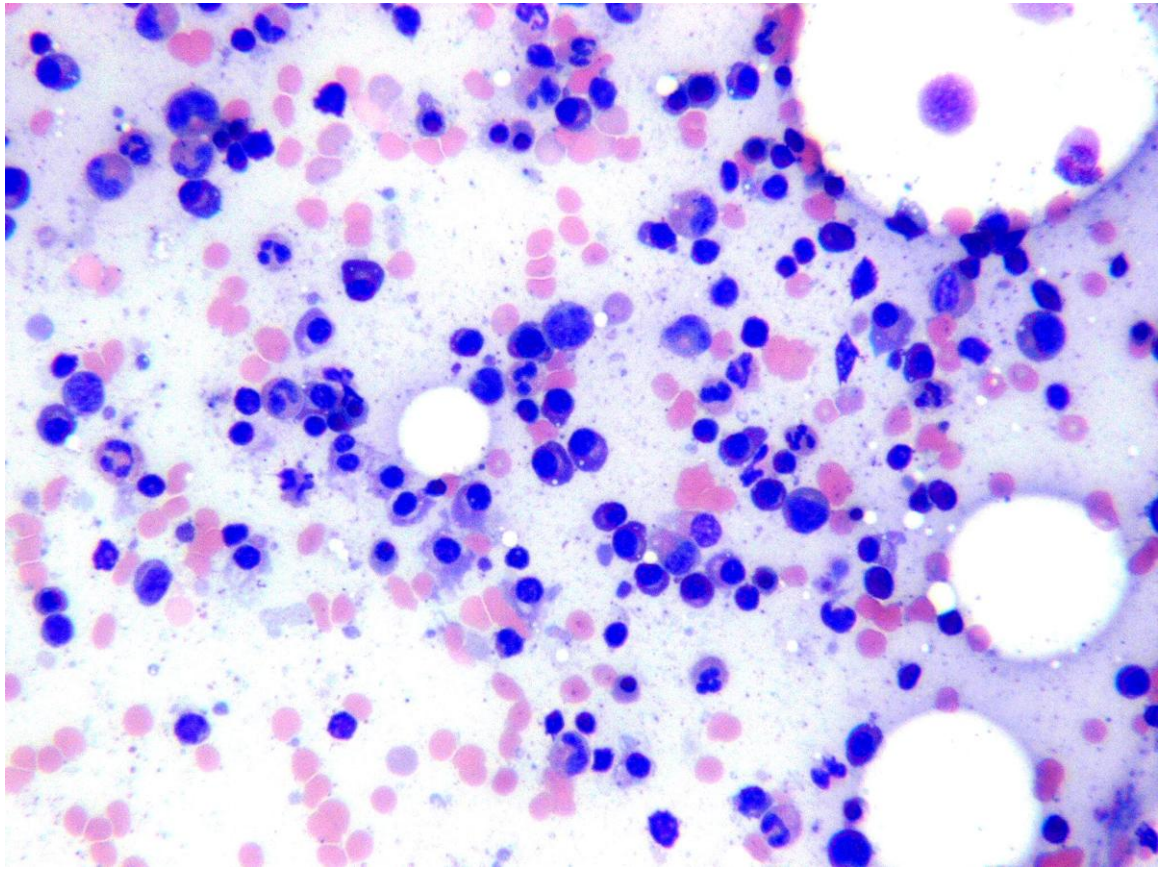
Peripheral Blood Smear (cont'd)



Peripheral Blood Smear (cont'd)

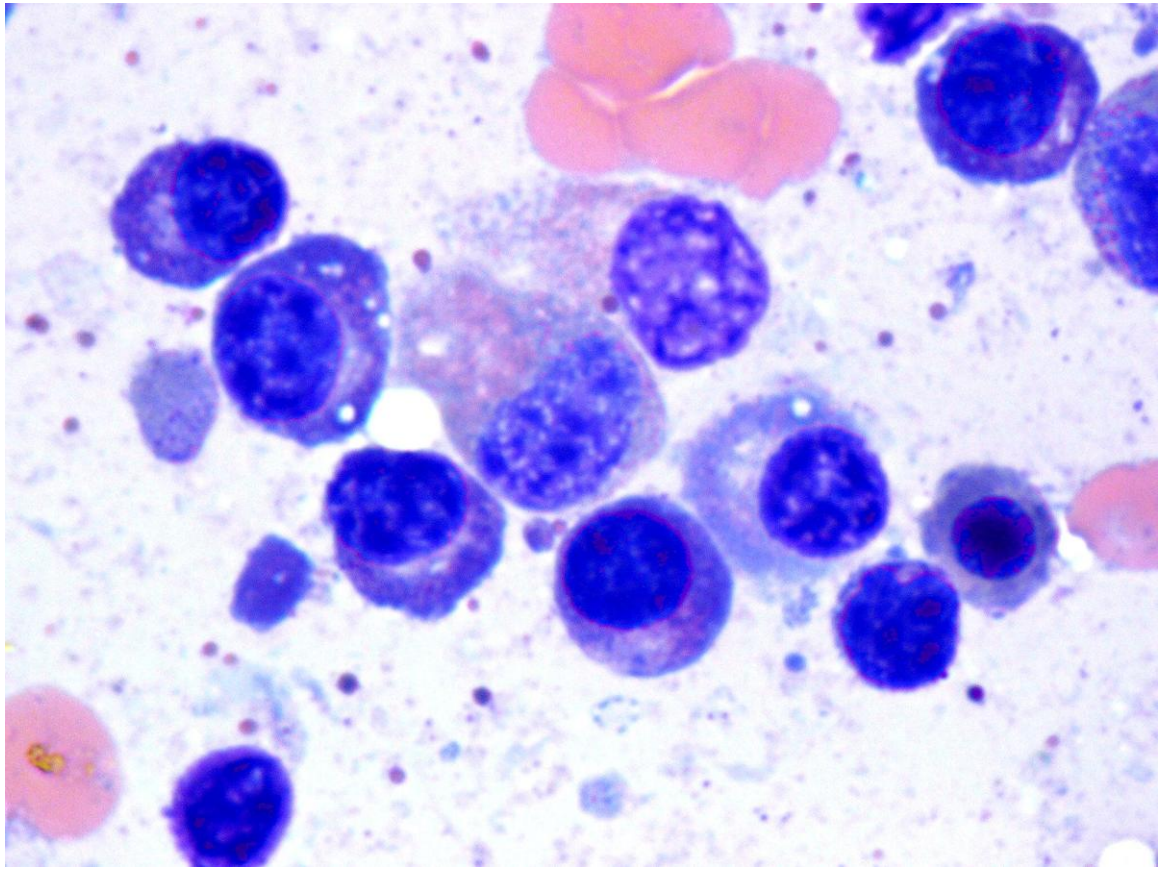


Bone Marrow Aspirate

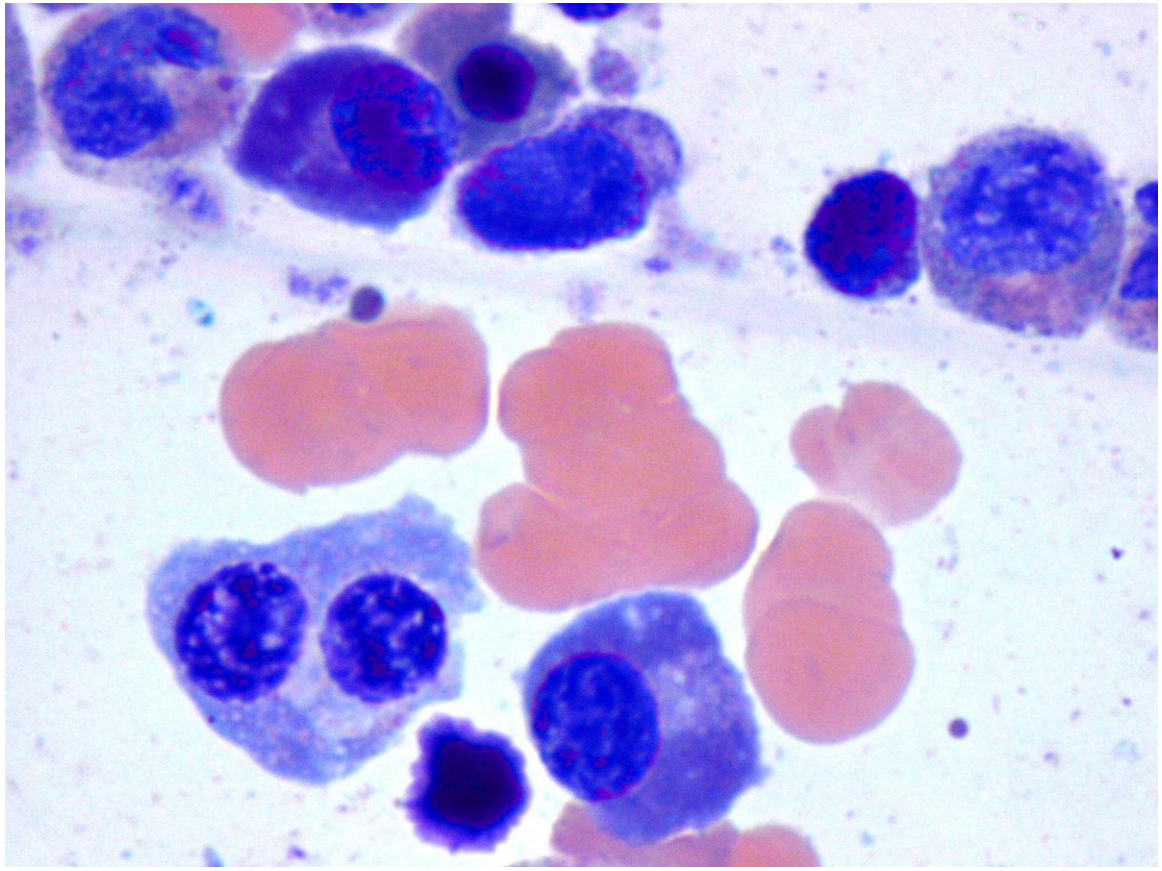


Bone Marrow Aspirate (cont'd)

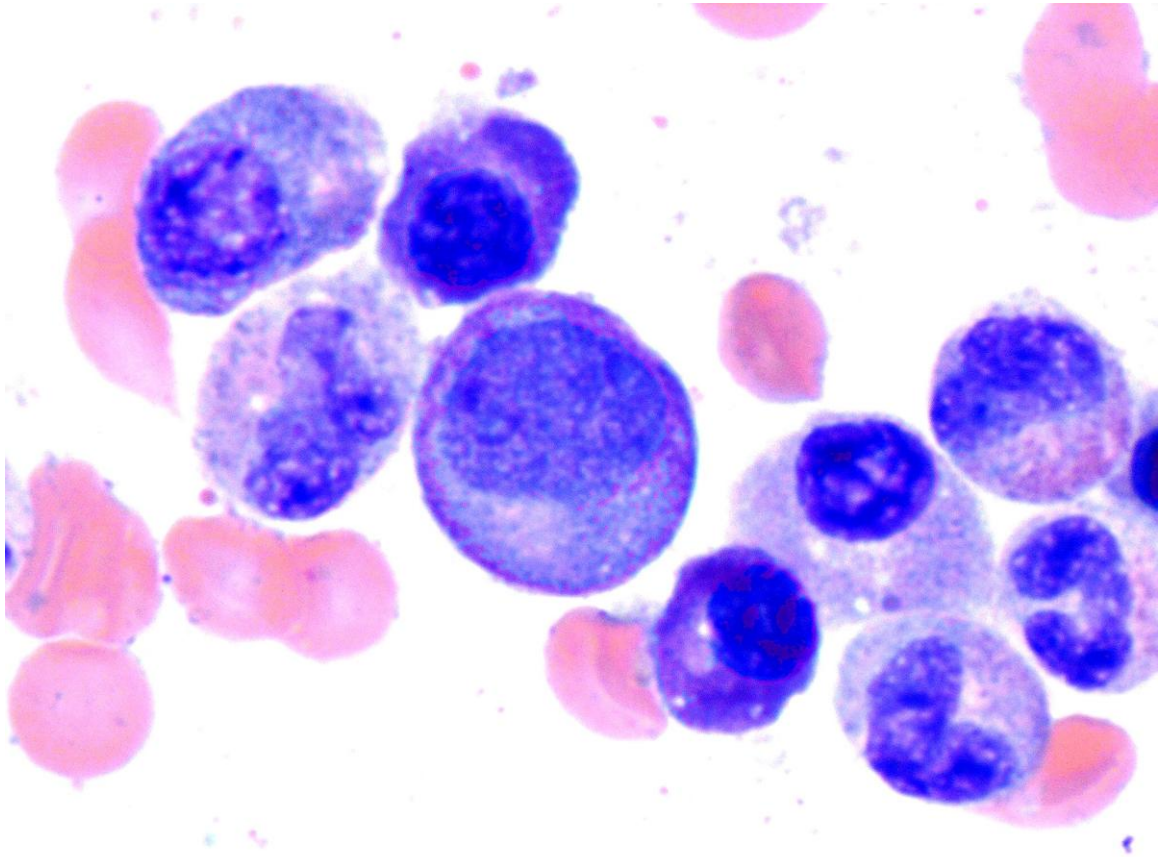
plasma cells 23%



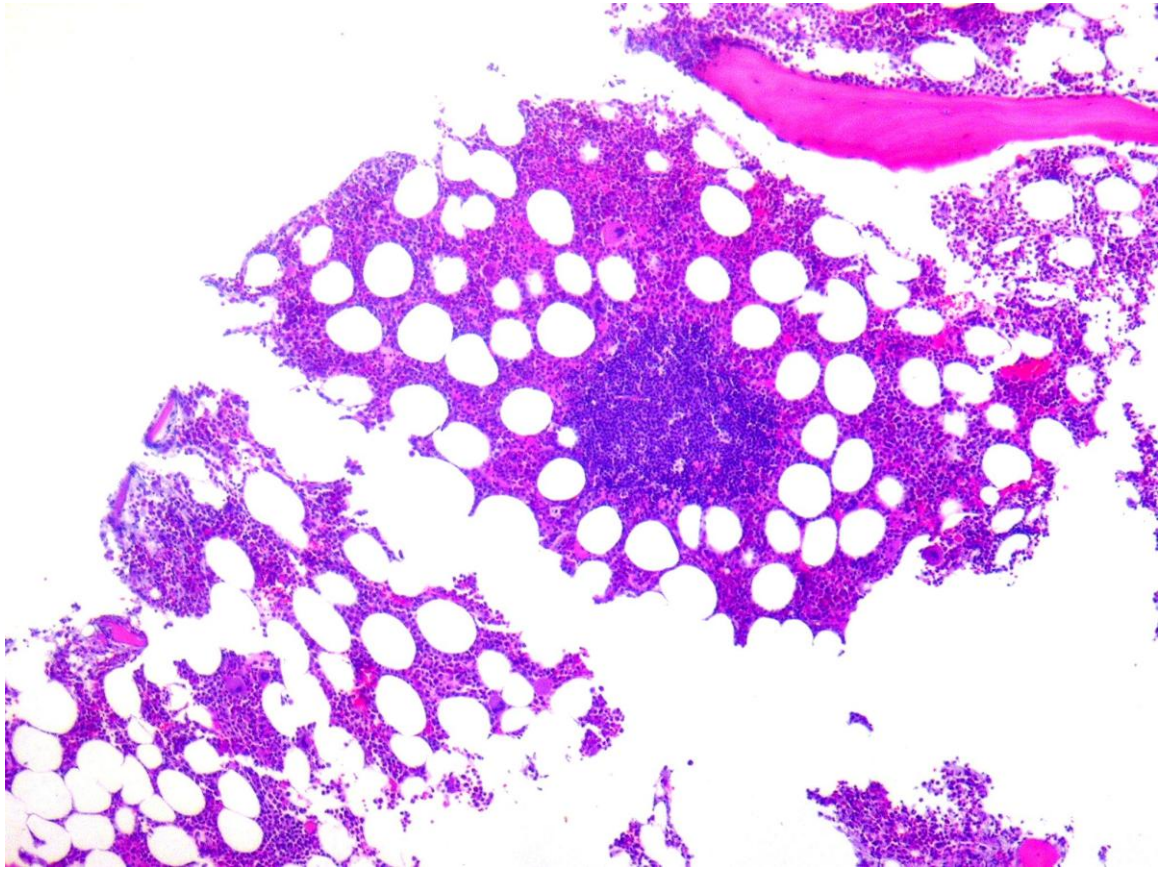
Bone Marrow Aspirate (cont'd)



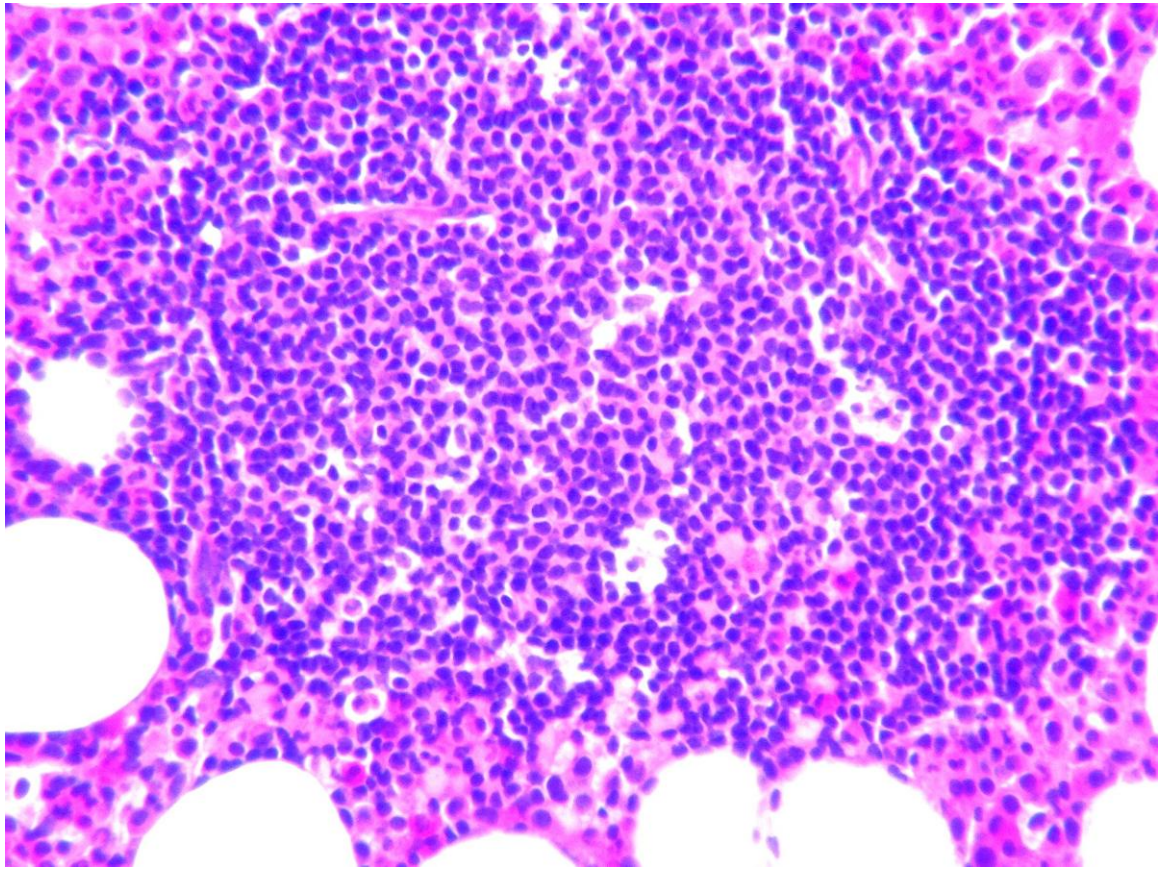
Bone Marrow Aspirate (cont'd)



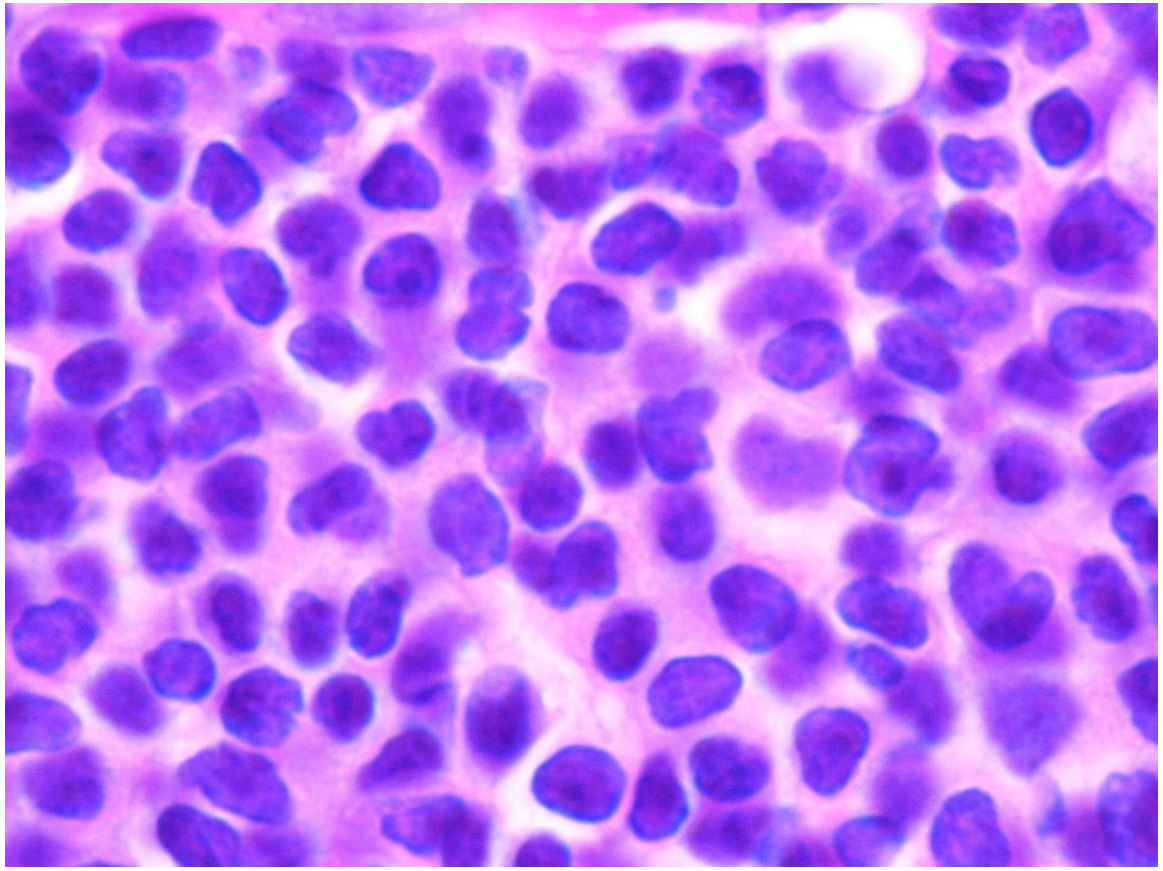
Bone Marrow Biopsy



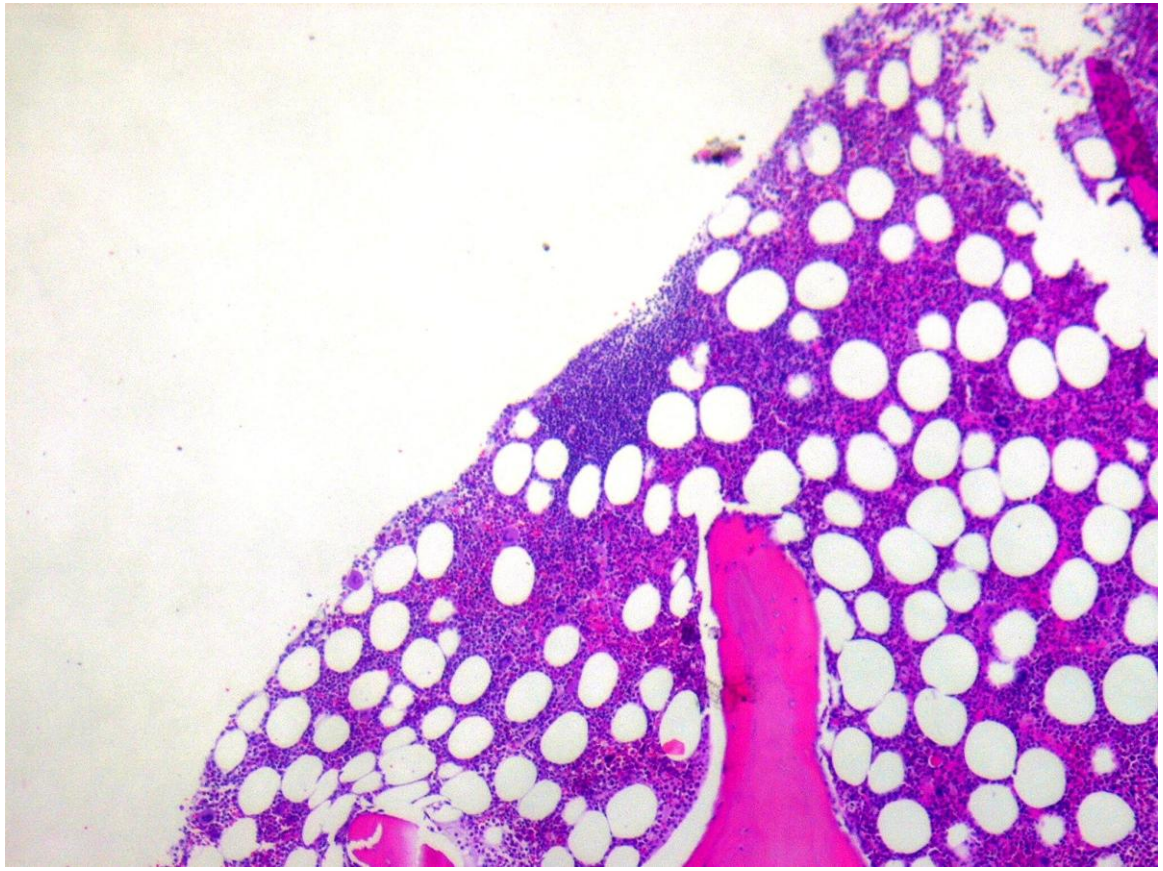
Bone Marrow Biopsy (cont'd)



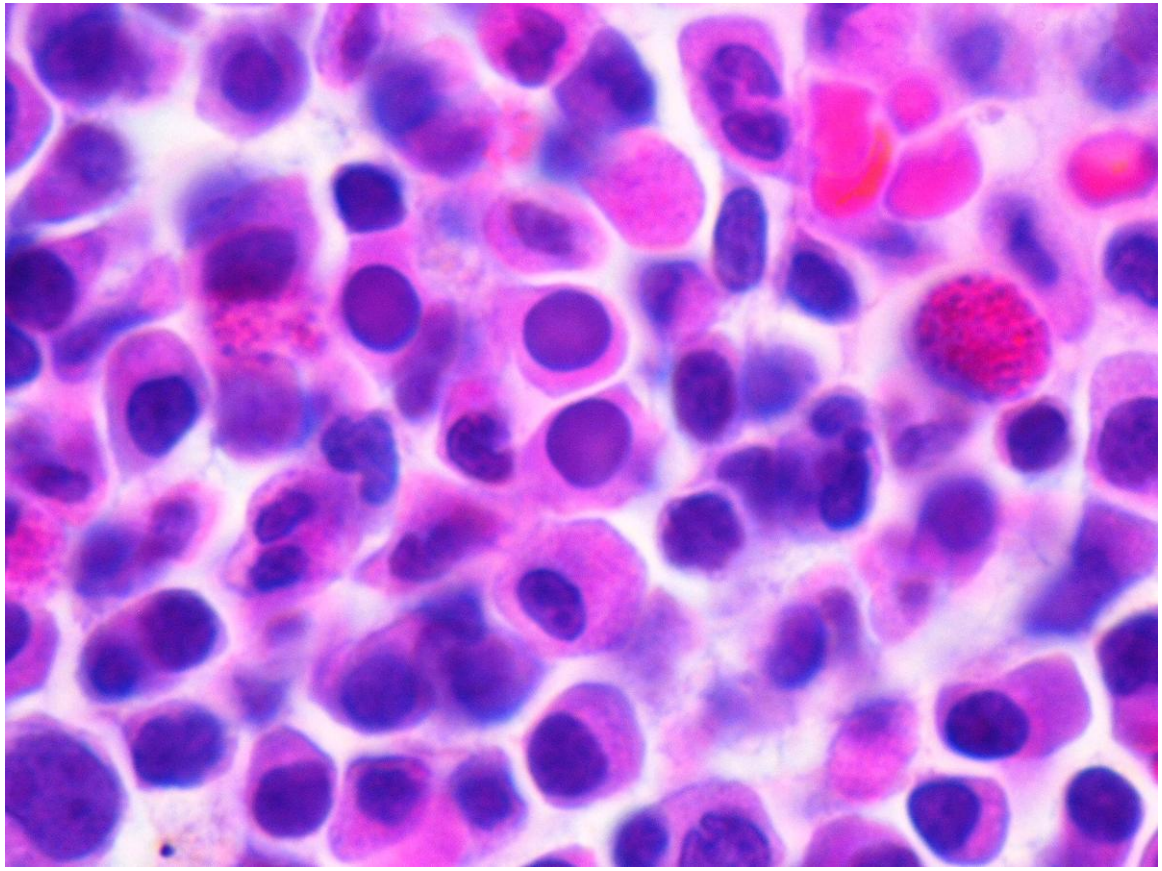
Bone Marrow Biopsy (cont'd)



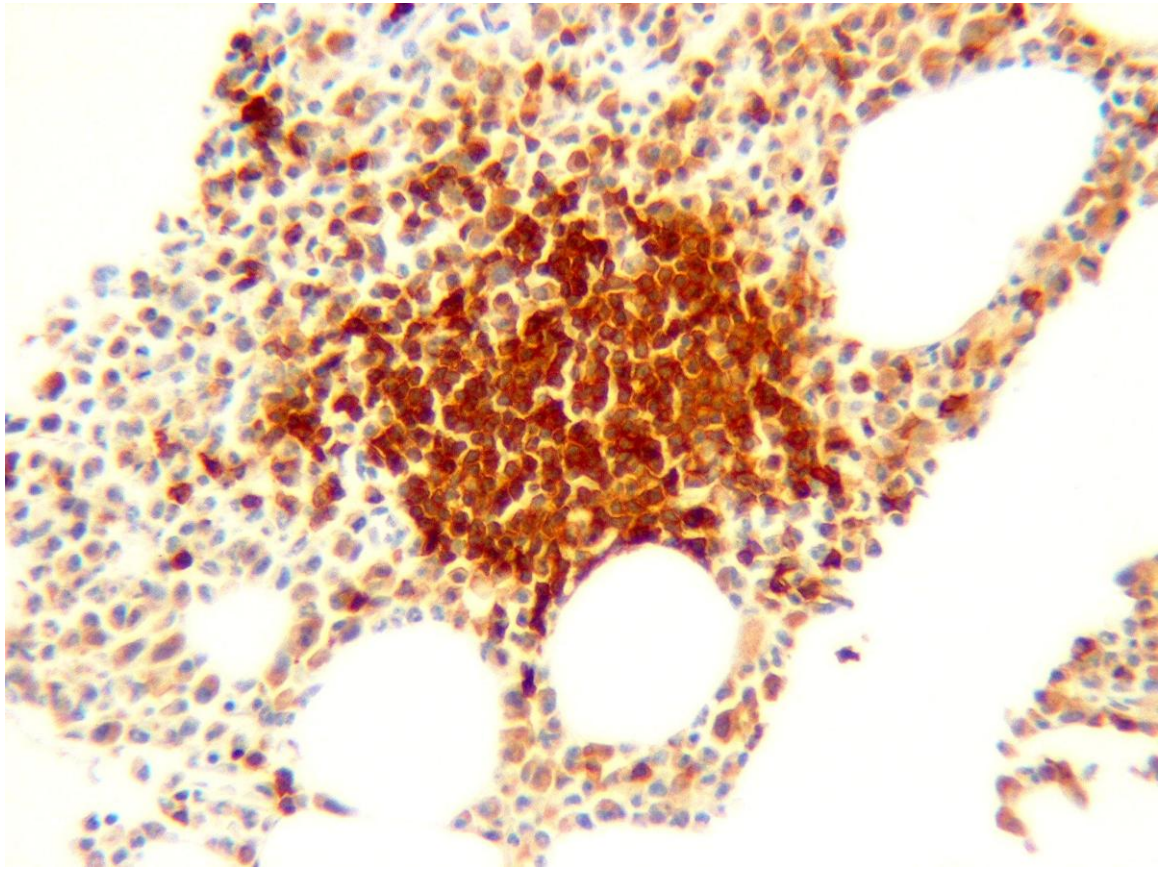
Bone Marrow Biopsy (cont'd)



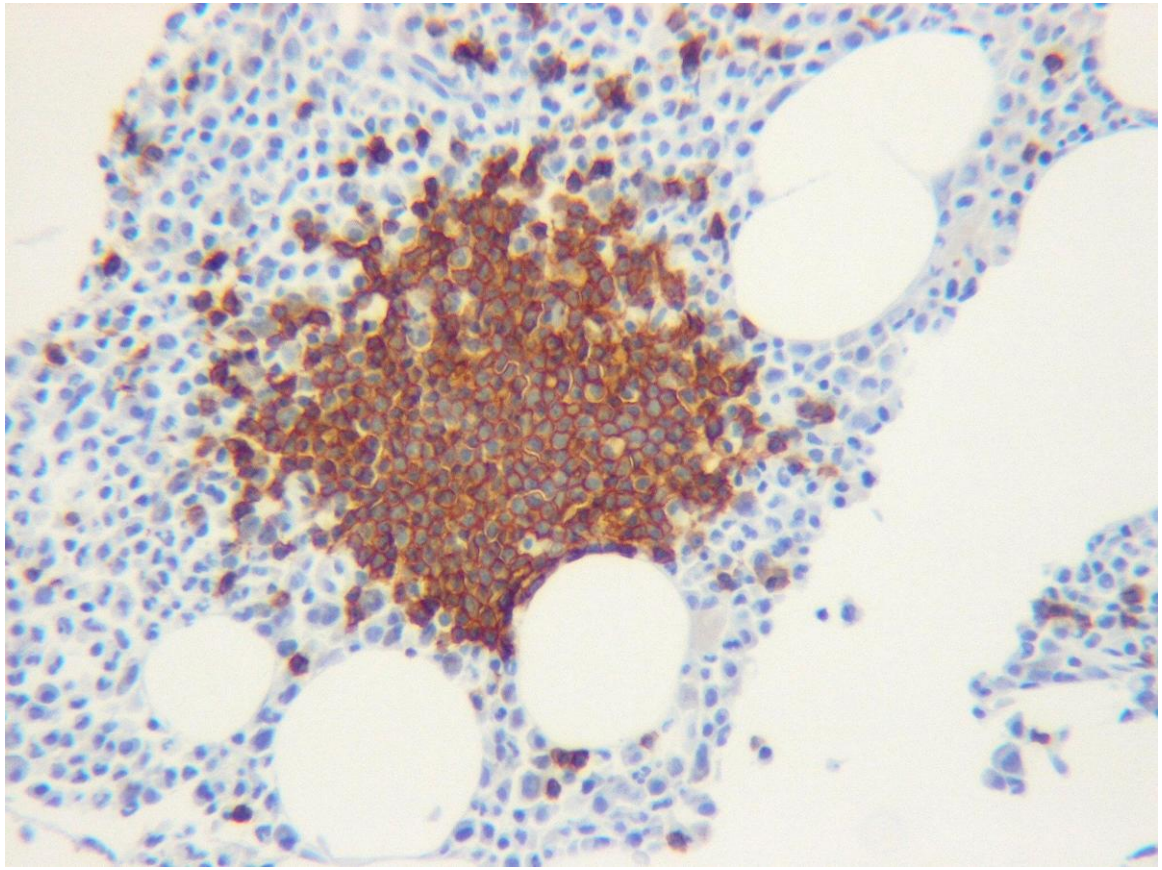
Bone Marrow Biopsy (cont'd)



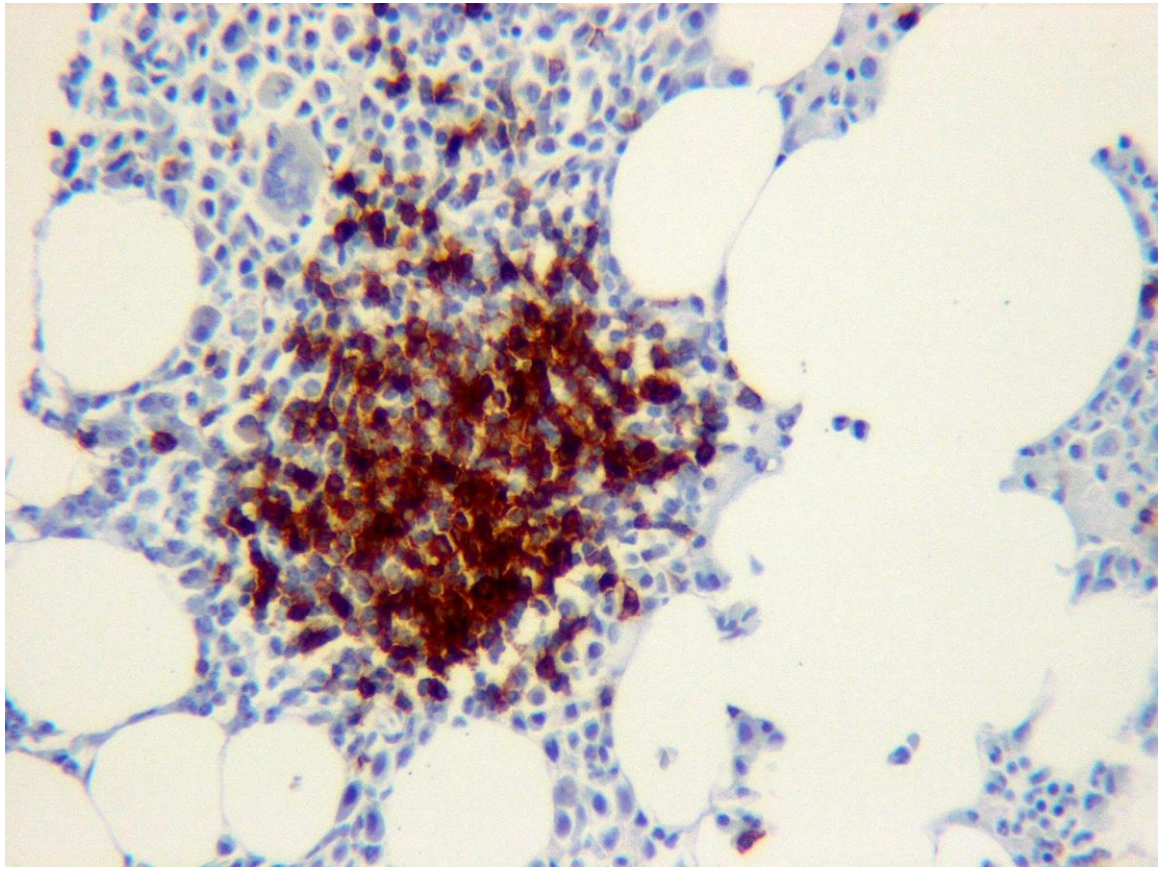
Bone Marrow Biopsy, Immunostain CD5



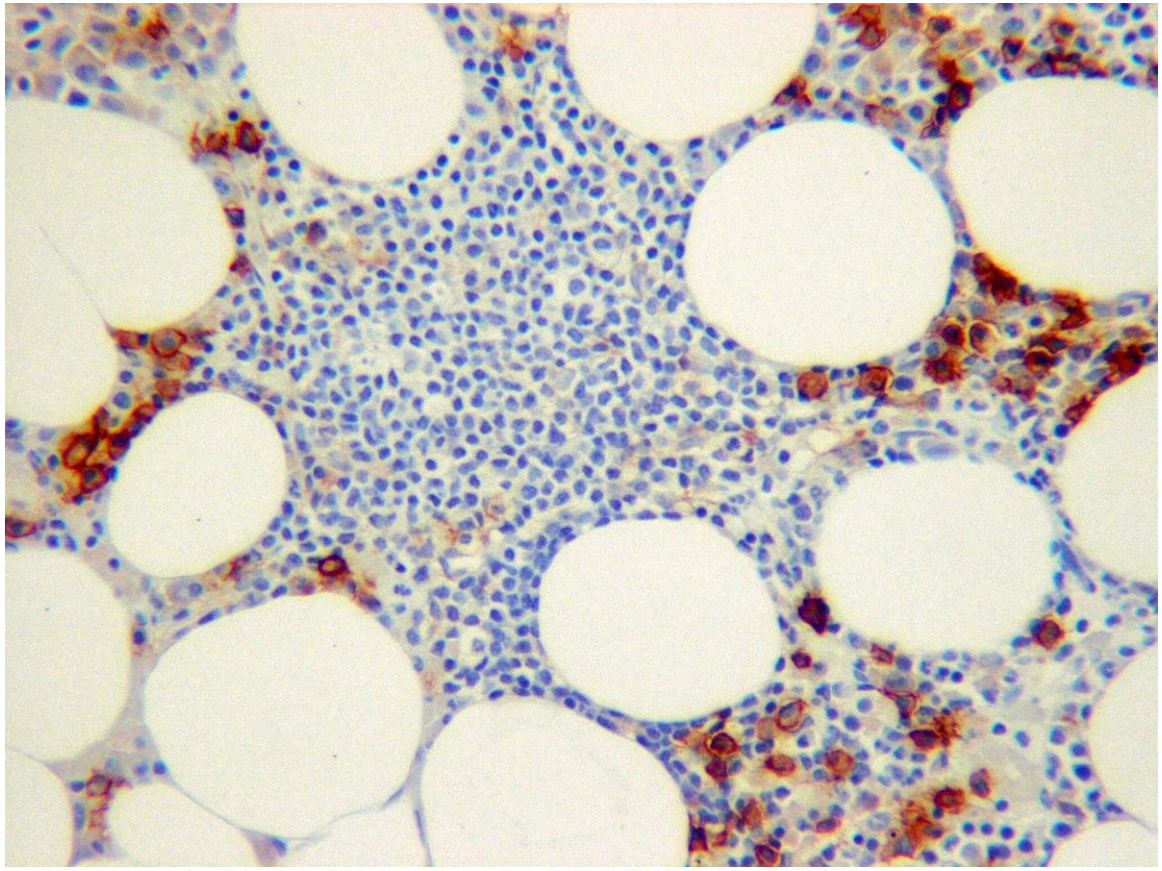
Bone Marrow Biopsy, Immunostain CD20



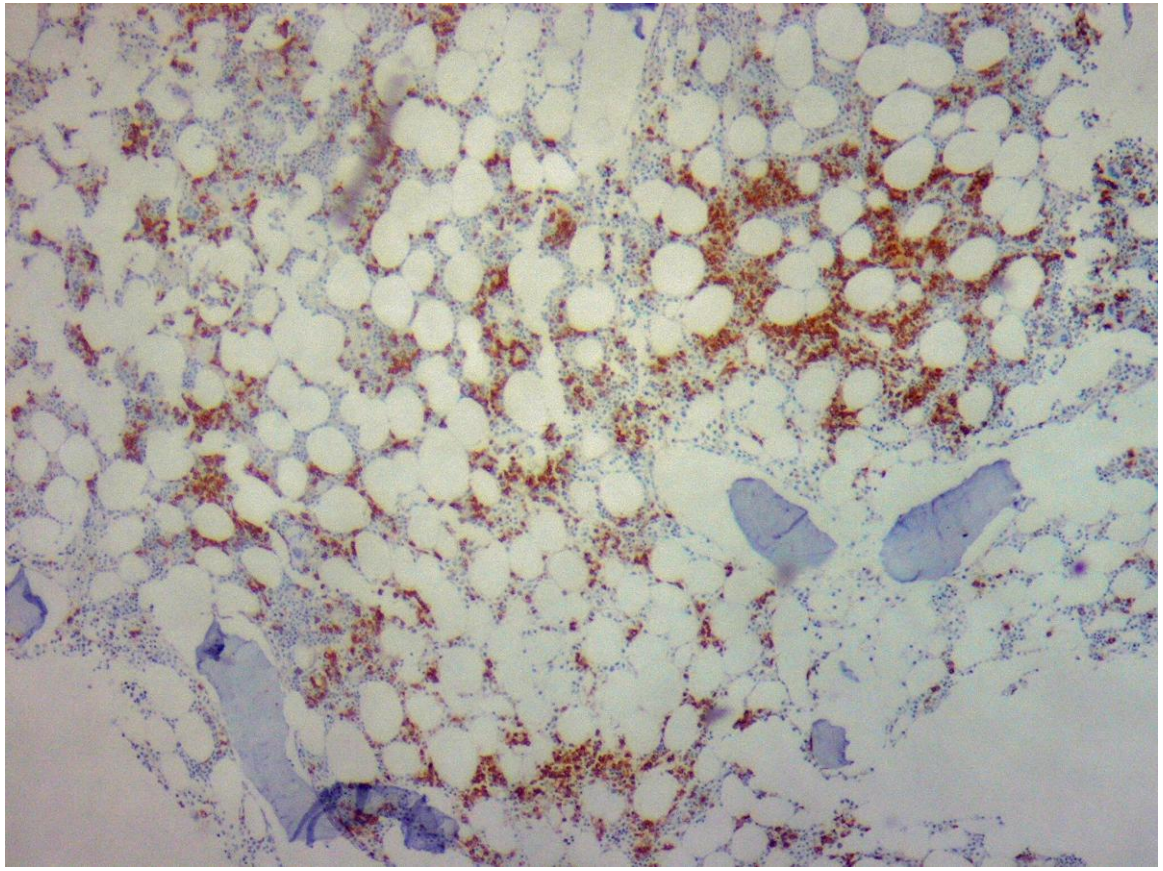
Bone Marrow Biopsy, Immunostain CD23



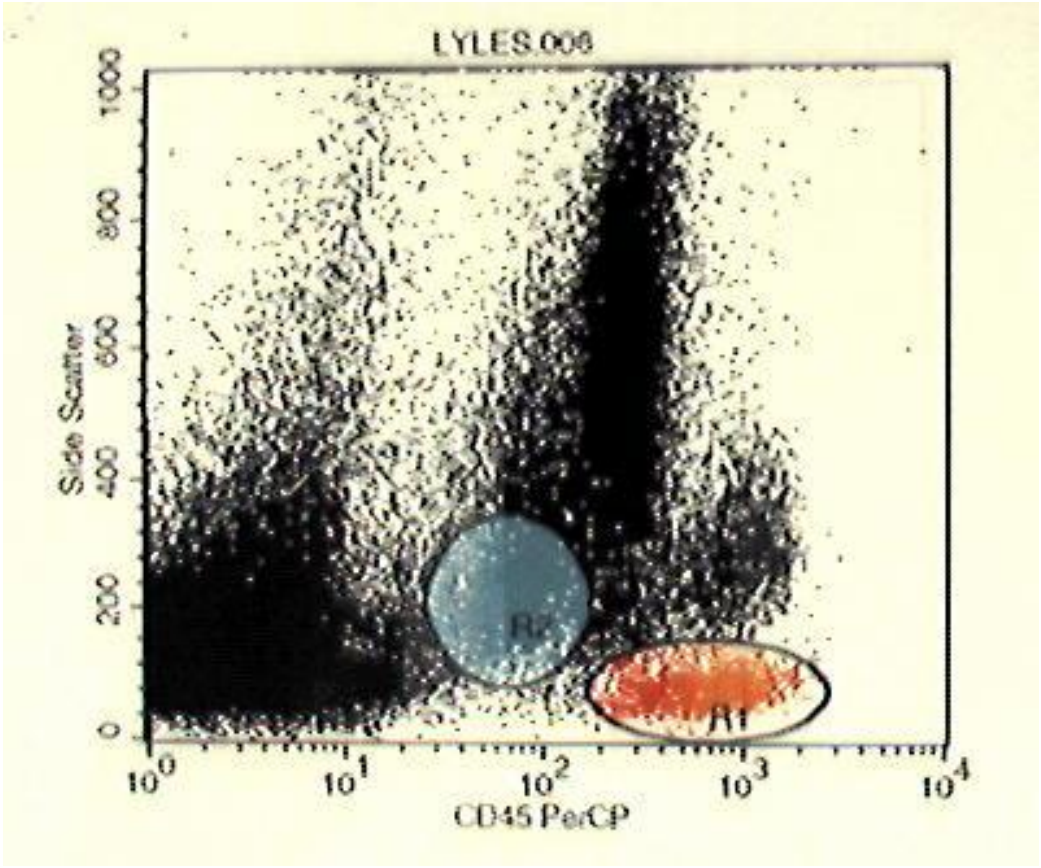
Bone Marrow Biopsy, Immunostain CD38



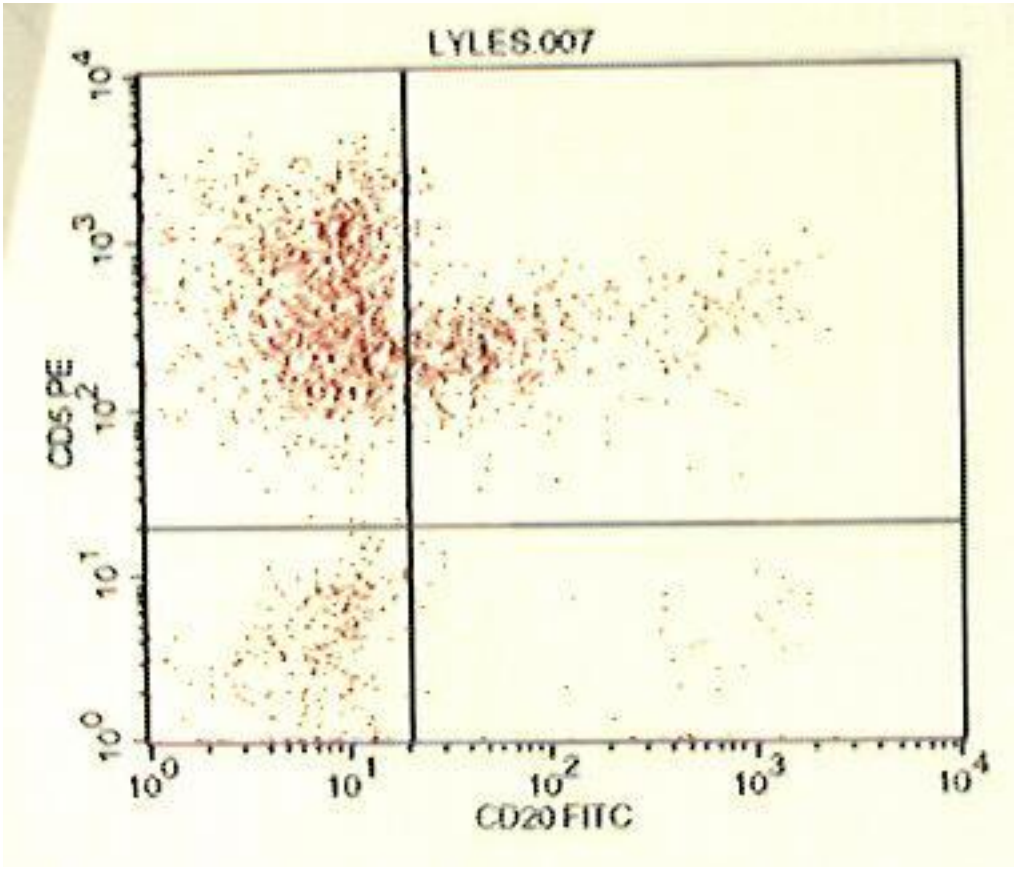
Bone Marrow Biopsy, Immunostain CD38 (cont'd)



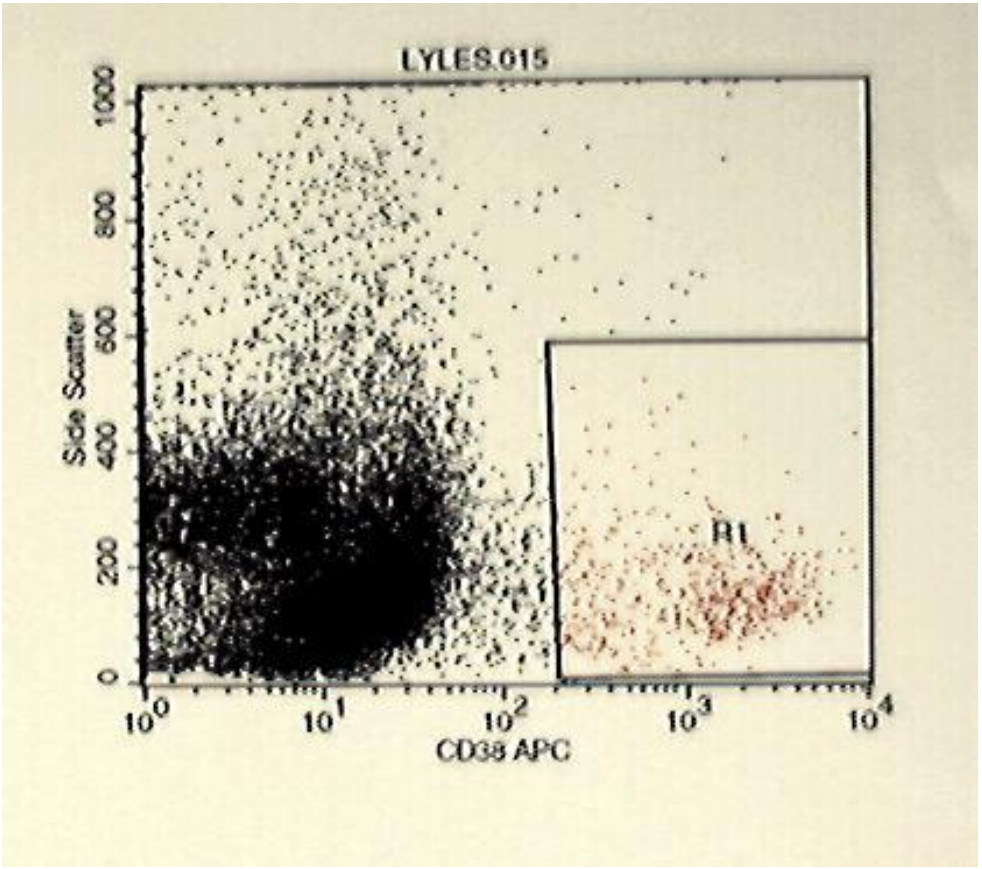
Bone Marrow Aspirate, Flow Cytometry



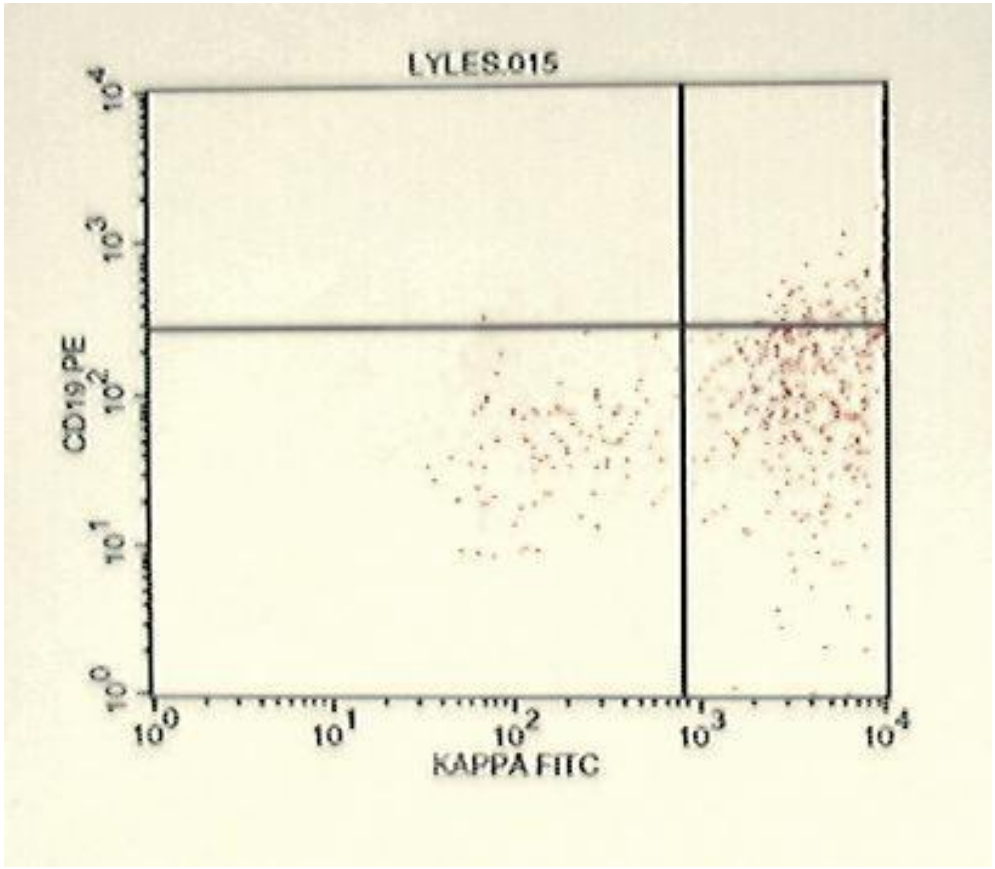
Bone Marrow Aspirate, Flow Cytometry (cont'd)



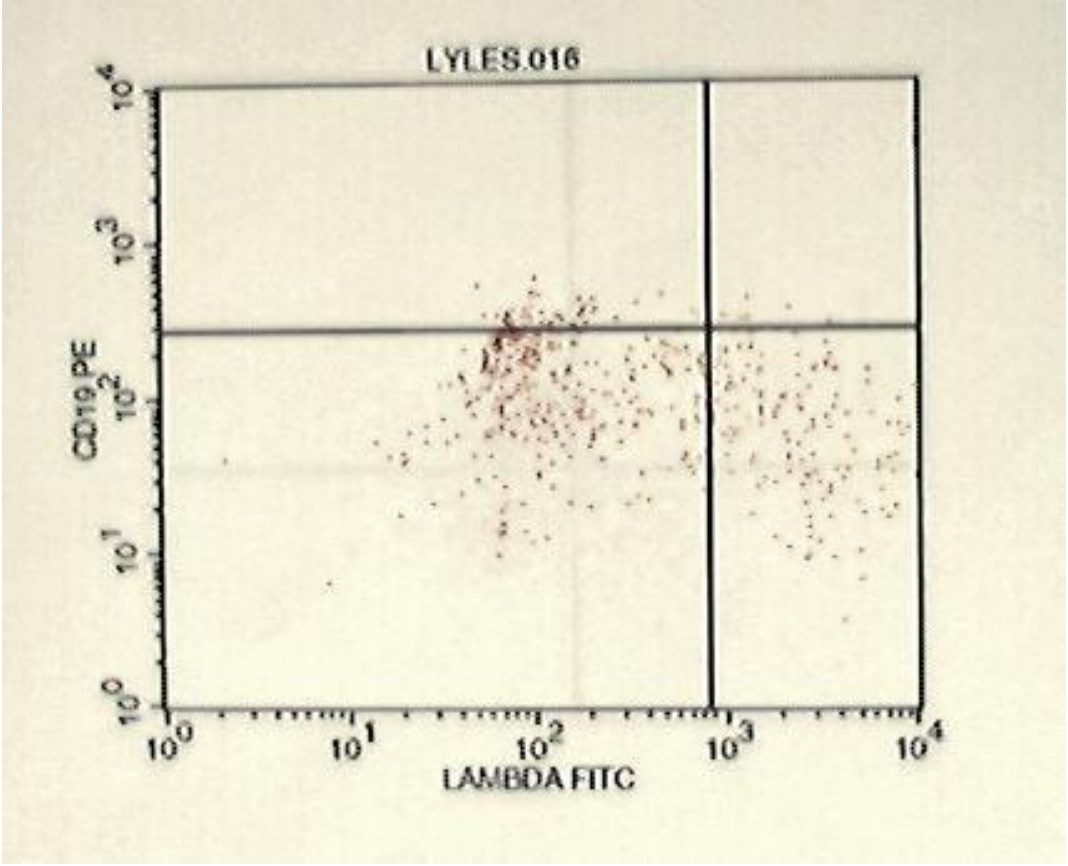
Bone Marrow Aspirate, Flow Cytometry (cont'd)



Bone Marrow Aspirate, Flow Cytometry (cont'd)



Bone Marrow Aspirate, Flow Cytometry (cont'd)



Diagnosis

- Flow cytometry:
  Lymphocyes: pos for CD5, CD20
  Plasma cells: pos for CD38, cytoplasmic Kappa
- Immunostains:
  Lymphocytic aggregates:pos for CD5, CD20, CD23
  Plasma cells: interstitial infiltrate

- DX:
  (a) Small lymphocytic lymhoma
  (b) Plasma cell dyscrasia (MGUS vs. Multiple myeloma)

  Oligonal bands: IgM-kappa x2
  IgG-kappa
  IgA-kappa

Diagnosis of Myeloma (Durie BG)

- A minimum of 1 major and 1 minor criteria or 3 minor criteria (which must include B. 1 & 2) in a symptomatic pat with progressive disease
- A. Major criteria:
  (1) marrow plasma cells > 30%
  (2) plasmacytoma on bx
  (3) M component: IgG > 3.5 g/dl, IgA> 2 g/dl
- B. Minor criteria:
  (1) marrow plasmsa cells 10-30%***
  (2) M component, less than A.3***
  (3) lytic bone lesion (?)
  (3) reduced normal Ig (IgG < 600 mg/dl, IgM < 50, IgA < 100)

Diagnosis of MGUS, Indolent Myeloma, Smodering Myeloma (Durie BG)

- Monoclonal gammopathy of undetermined sugnificance (MGUS):
  (1) M component, less than myeloma level***
  (2) marrow plasma cells < 10%
  (3) no lytic lesions (?)
- Smodering myeloma:
  (1) M component at myelome level
  (2) marrow plasma cells 10-30%***
- Indolent myeloma:
  (1) IgG 3.5-7 g/dl, IgA 2-5 g/dl
  (2) rare lytic lesions without compression
  (3) normal Hgb, Ca, Cr

Cold Agglutinin

Table 15-4 Characteristics of Cold Agglutinin–Associated Disease

Clinical Parameter	Physiologic	Acute Postinfectious	Chronic Idiopathic	CAD
Age	Any	Young	Older	Older
Onset	Asymptomatic	Acute, 10-14 days	Insidious	Insidious
Splenomegaly	No	Frequent	No	With lymphoma
Titer	≤1:32	≥1:64	≥1:256*	>1:10,000*
Specificity	Anti-I	Anti-I, anti-i	Anti-I, anti-i	Anti-I
DAT results	Negative	+(G,M,C3)	+(C3)	+(C3)
Intravascular hemolysis	No	40%	No	Rare

Abbreviations: CAD = cold agglutinin disease, DAT = direct antiglobulin test.

*Representative range for titer.

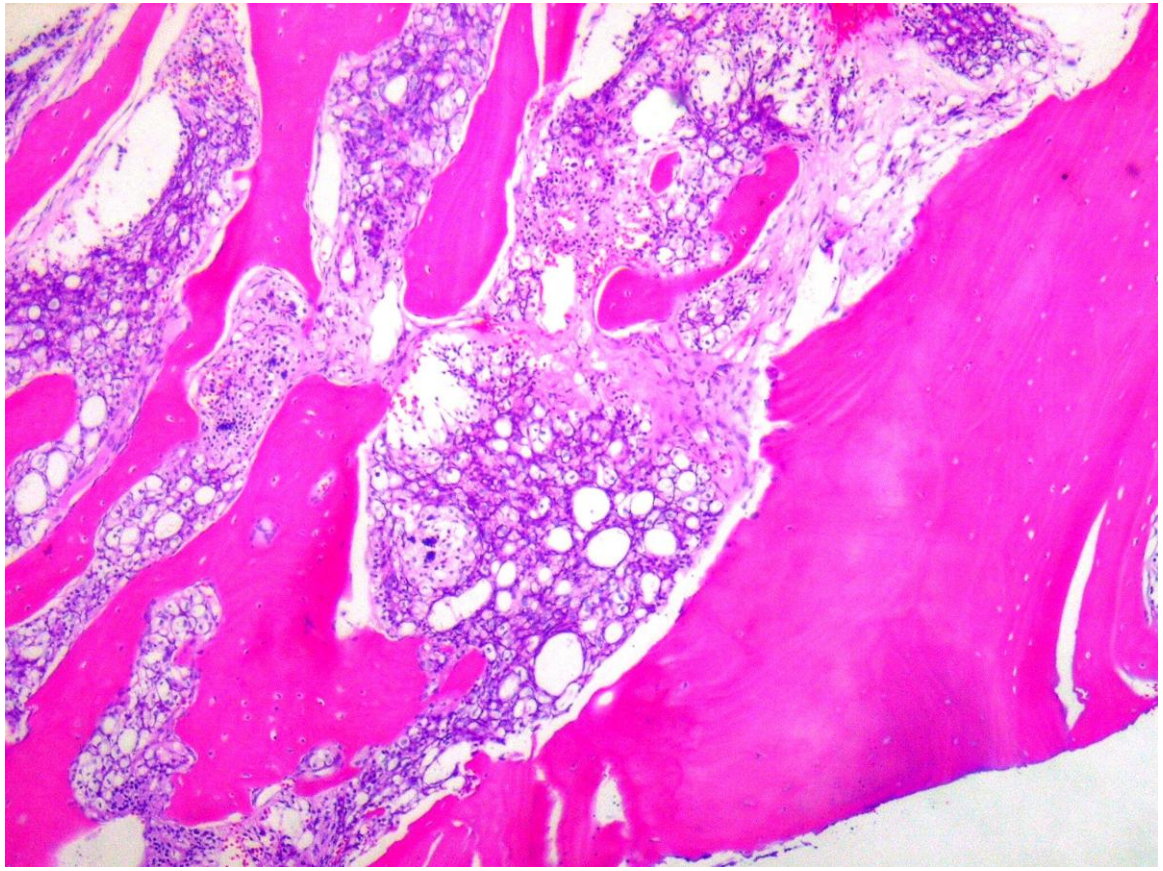
Multiple Gammopathies

- Multiple gammopathies (including biclonal gammopathies): distinct monoclonal proteins
- Incidence:
  MGUS: 50%
  Multiple myeloma: 25%
  Lymphoproliferative disorders (lymphoma, CLL, Waldenstrom's)
- The light chains are of the same type in 2/3 of cases suggesting transforming event in a single precursor B cell (switch from one heavy chain class to another). Studies have shown monoclonal proteins sharing antigenic determinants

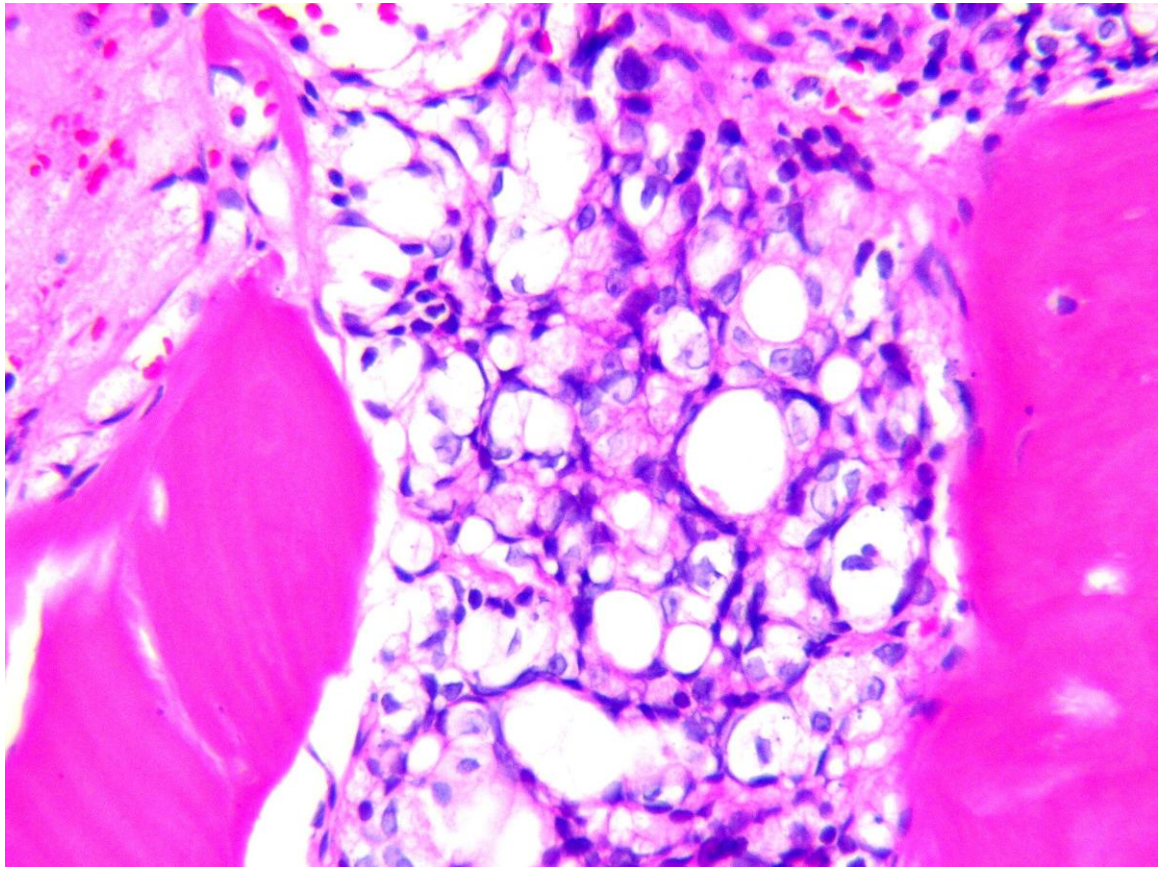
Bone Marrow Case
Patient: Roberxxx Brocxxx

- 81 year old white male with pancytopenia, markedly elevated PSA (>2,000 ng/ml, ref < 4)
- WBC=4.5, Hgb=9.3, Plt=20K, MCV=88.6, Retic 1.6%
  Seg 62%, Lymph 15%, rare NRBCs
- Bone marrow procedure: dry tap

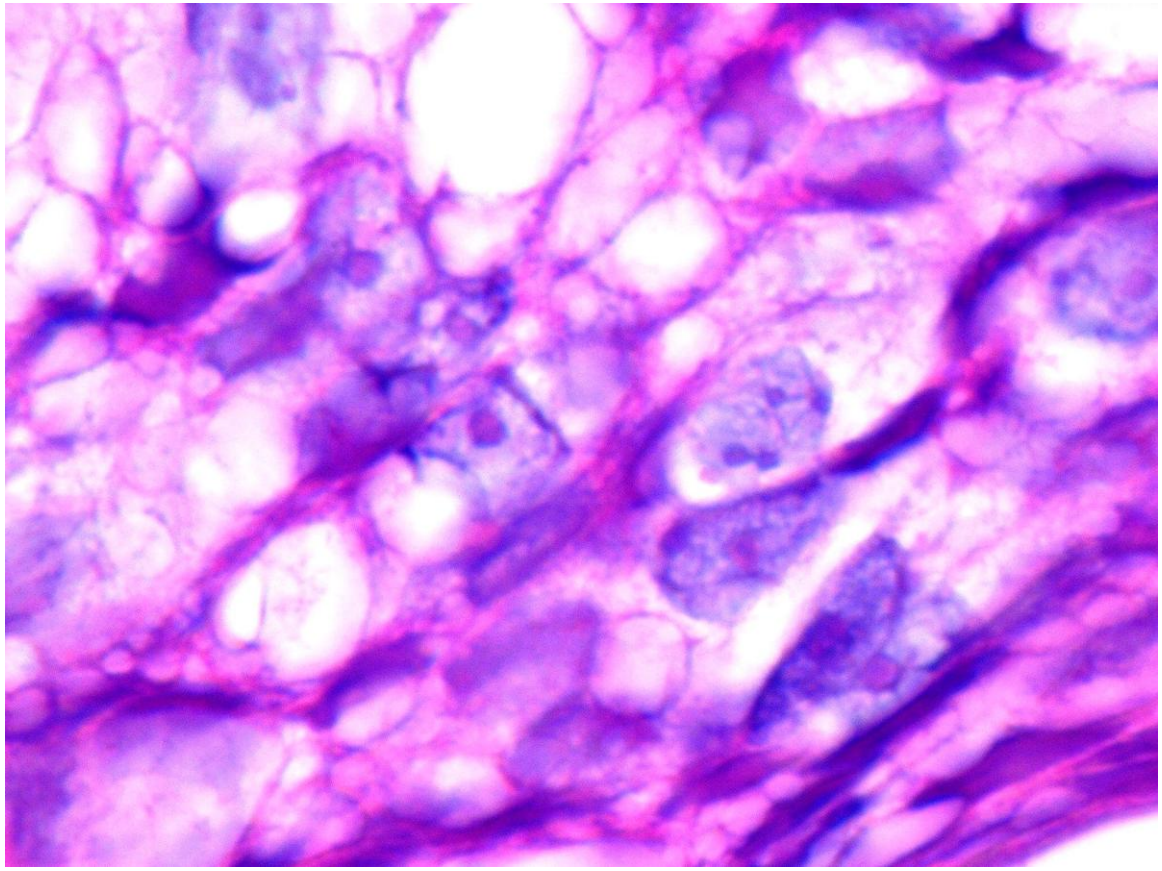
Bone Marrow Biopsy



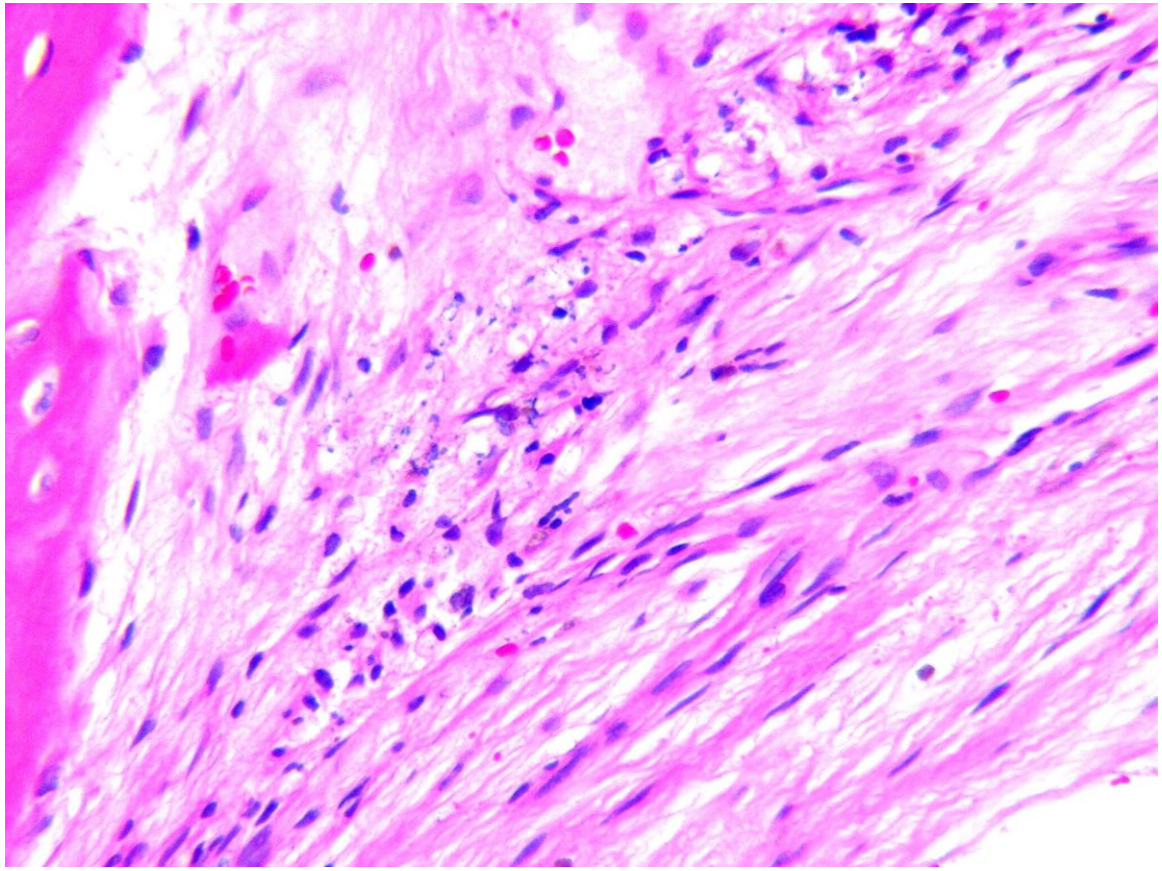
Bone Marrow Biopsy (cont'd)



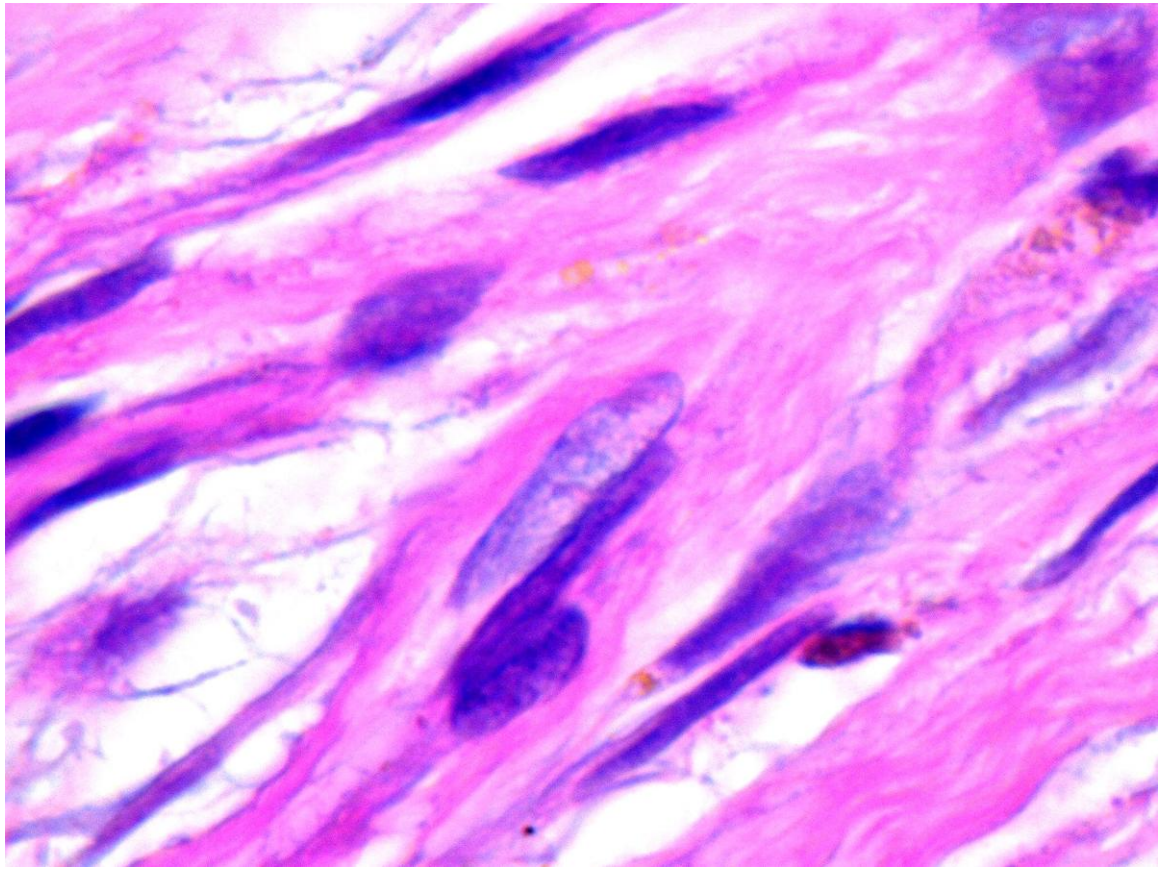
Bone Marrow Biopsy (cont'd)



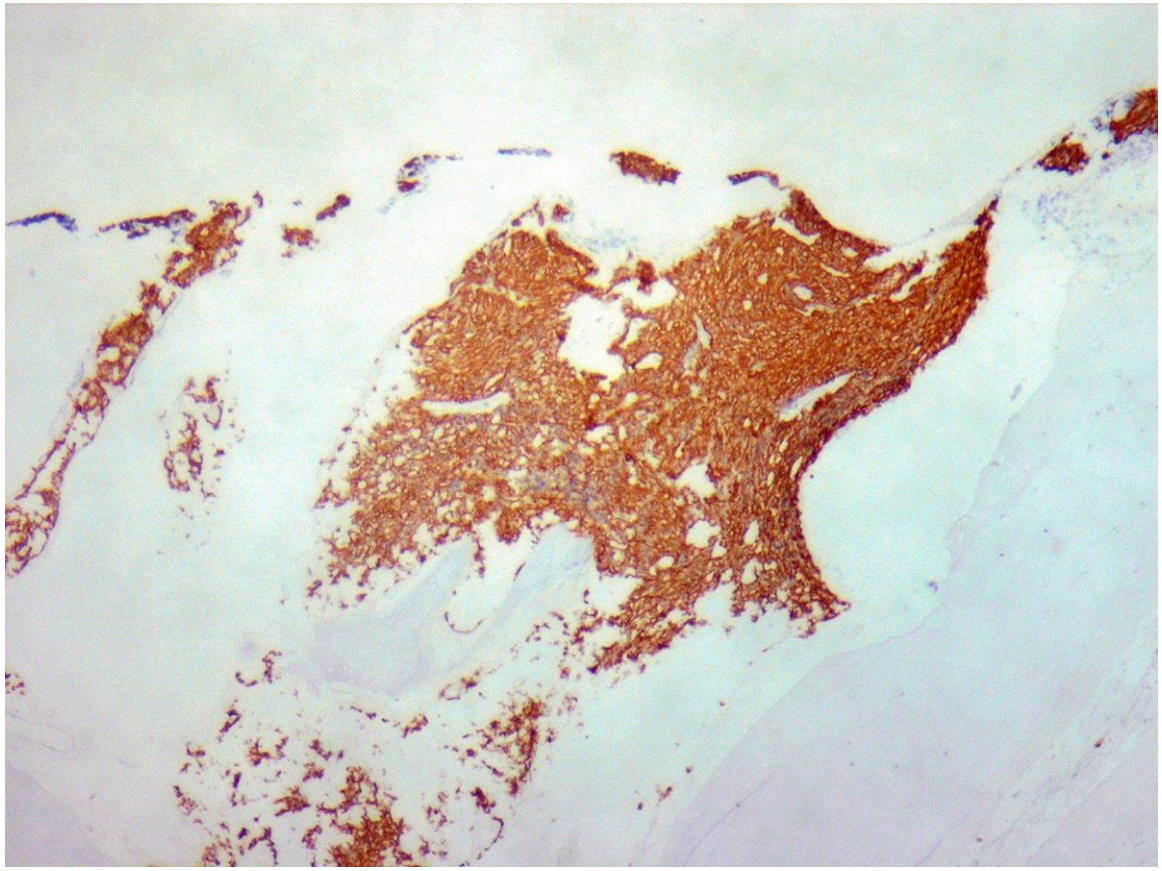
Bone Marrow Biopsy (cont'd)



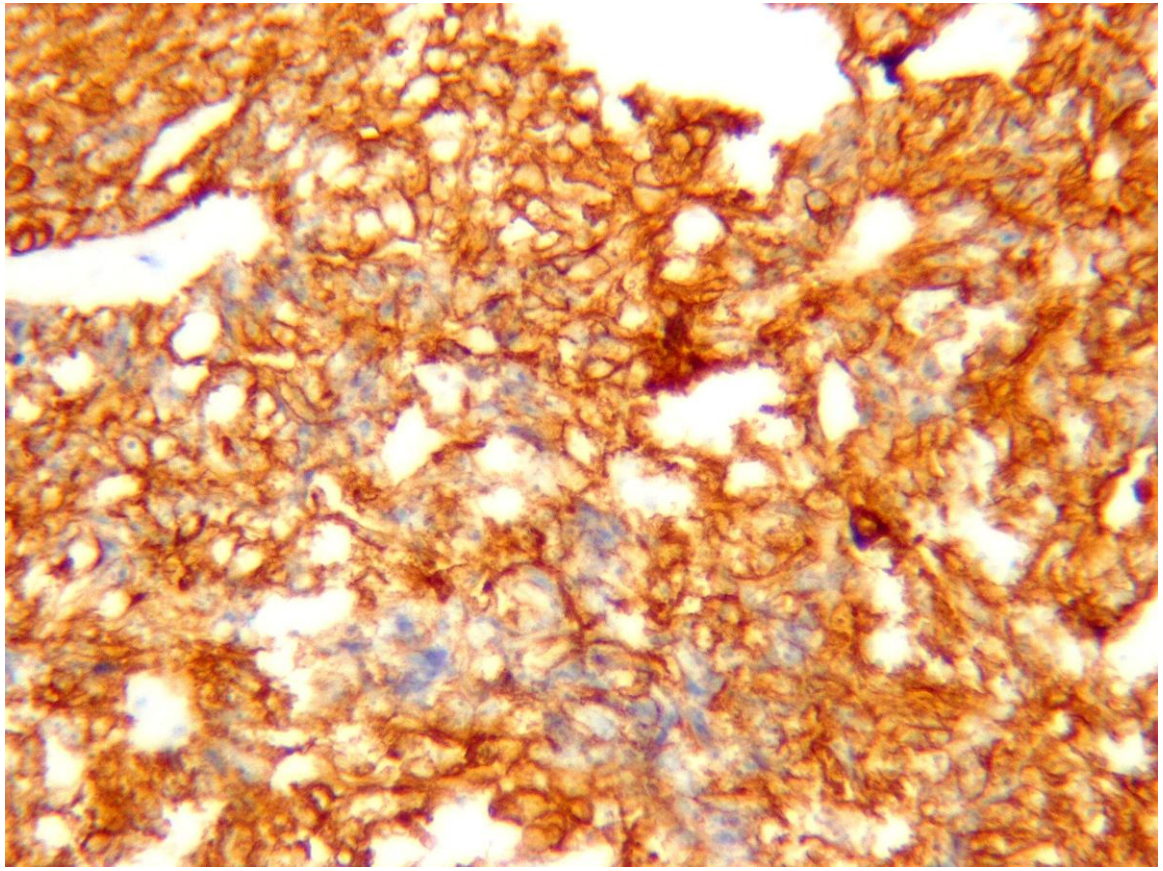
Bone Marrow Biopsy (cont'd)



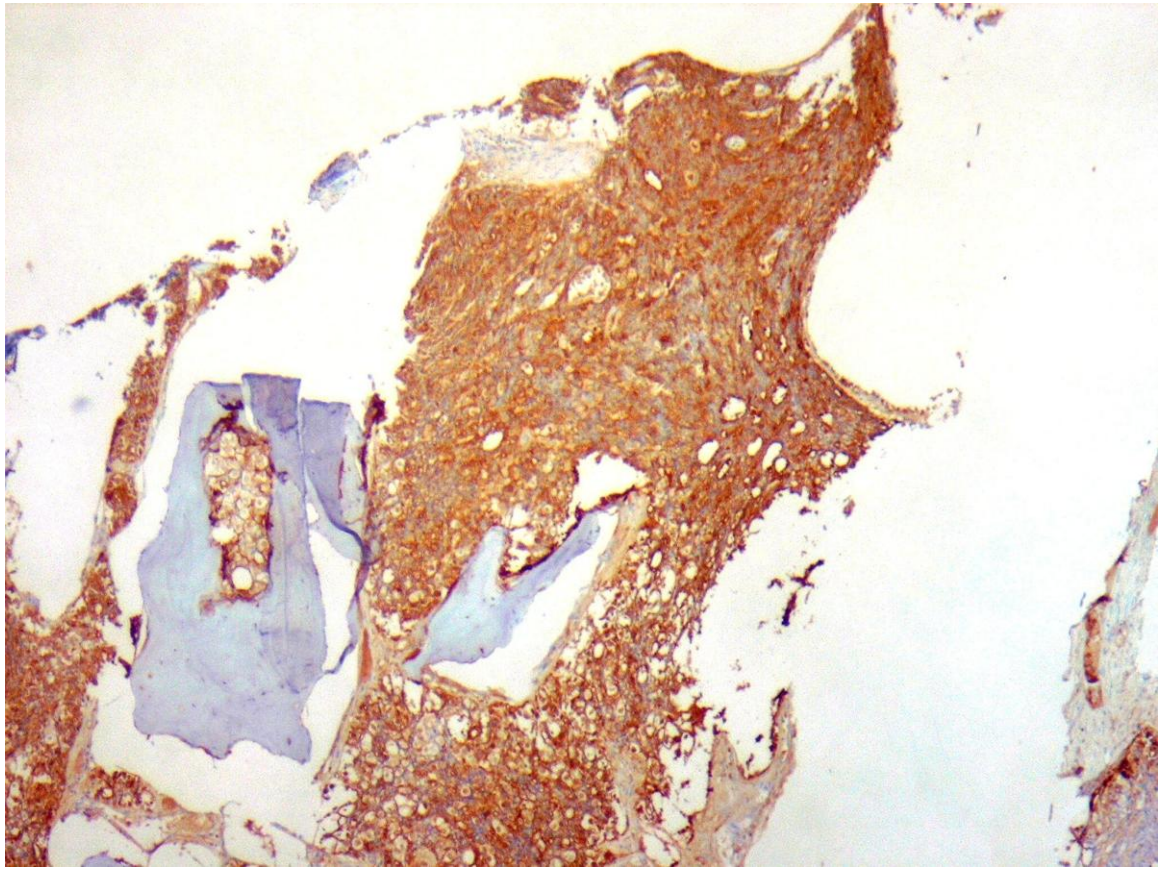
Bone Marrow Biopsy, Immunostain keratin



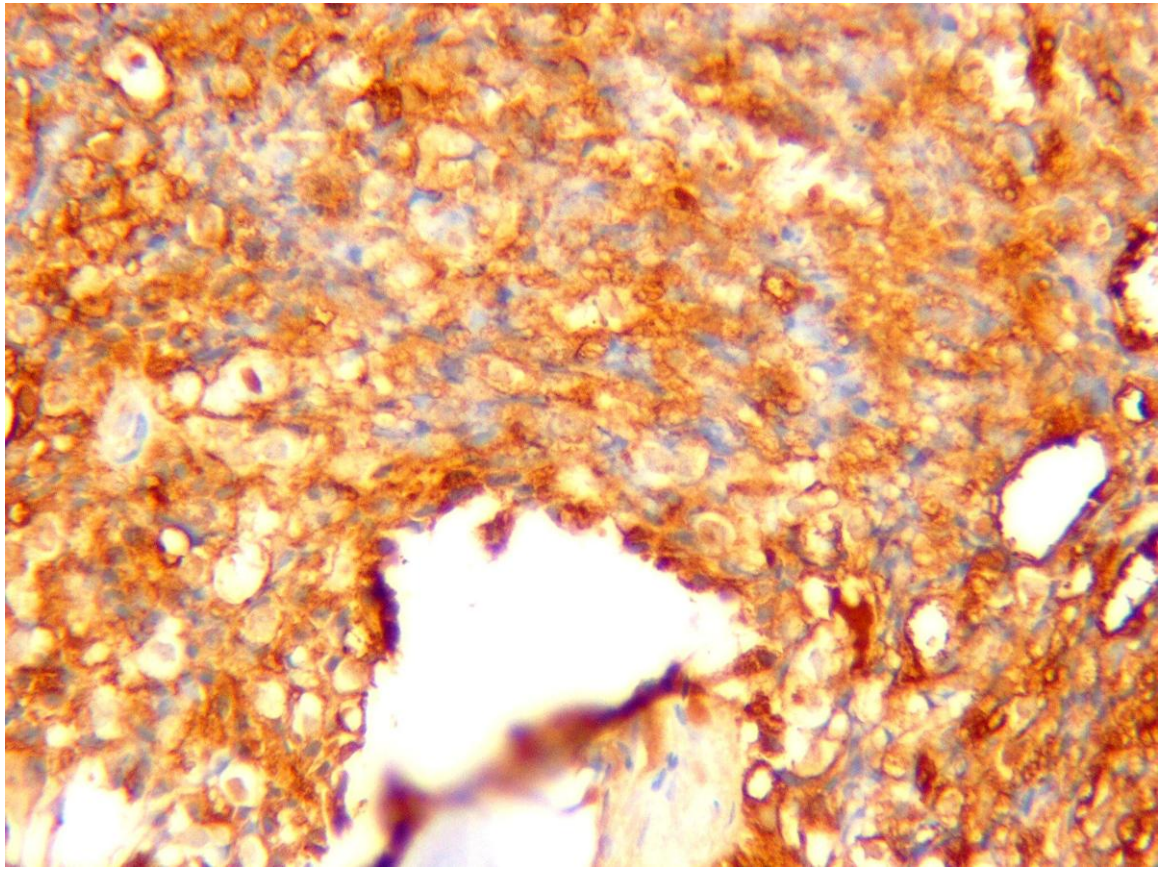
Bone Marrow Biopsy, Immunostain keratin (cont'd)



Bone Marrow Biopsy, Immunostain PSA



Bone Marrow Biopsy, Immunostain PSA (cont'd)



Diagnosis

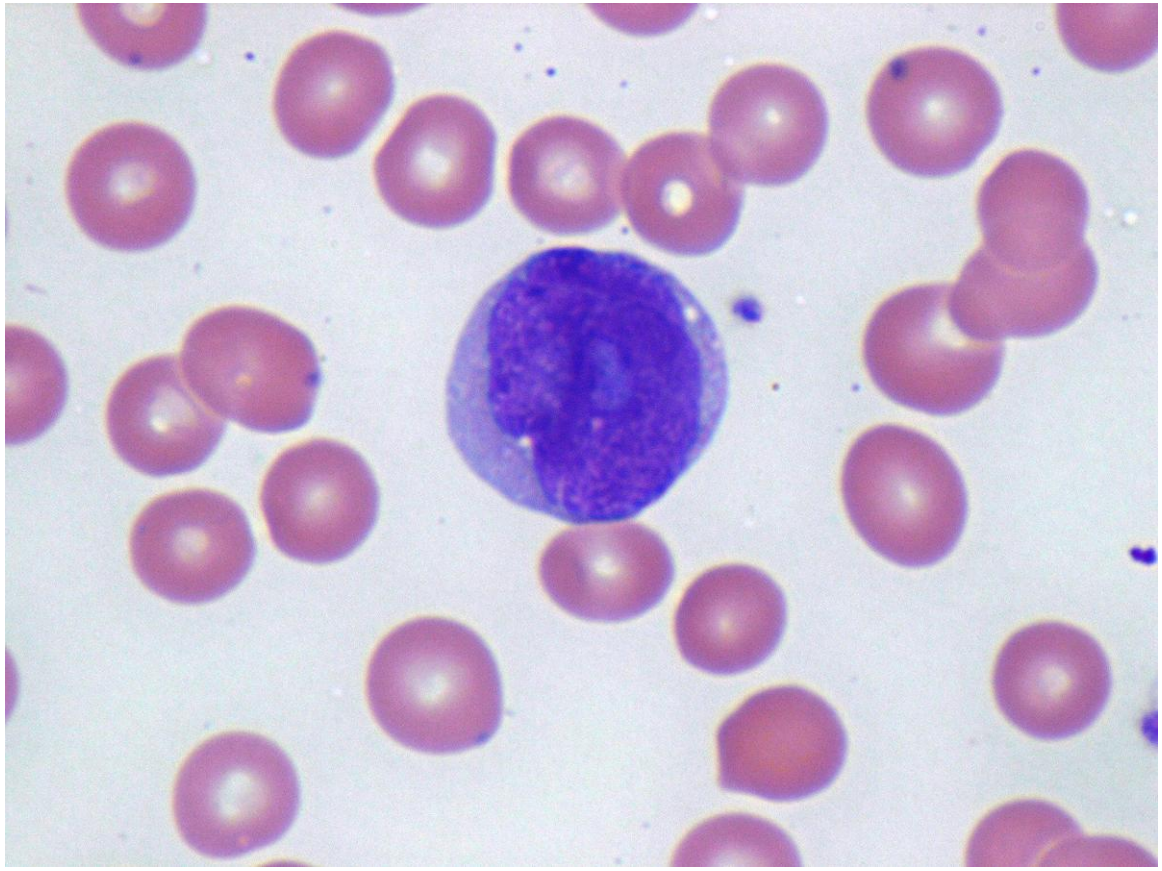
- Prostate carcinoma metastasis

Peripheral Blood Smear Case
Patient: Hildxxx Bailexxx

- 49 year-old African-American female presented to ER with leg pain, no edema. Also SOB for 2 weeks, weight loss of 10 lb/ 12 months, loss of appetite, night sweat (thought to be a/w menopause
- Past medical Hx of HTN, post-partum cardiomyopathy (1989), hysterectomy for fibroid (.
- WBC=11.3, Hgb= 10.0, Plt=189, MCV 90.2
- Venous doppler: negative for venous thrombosis

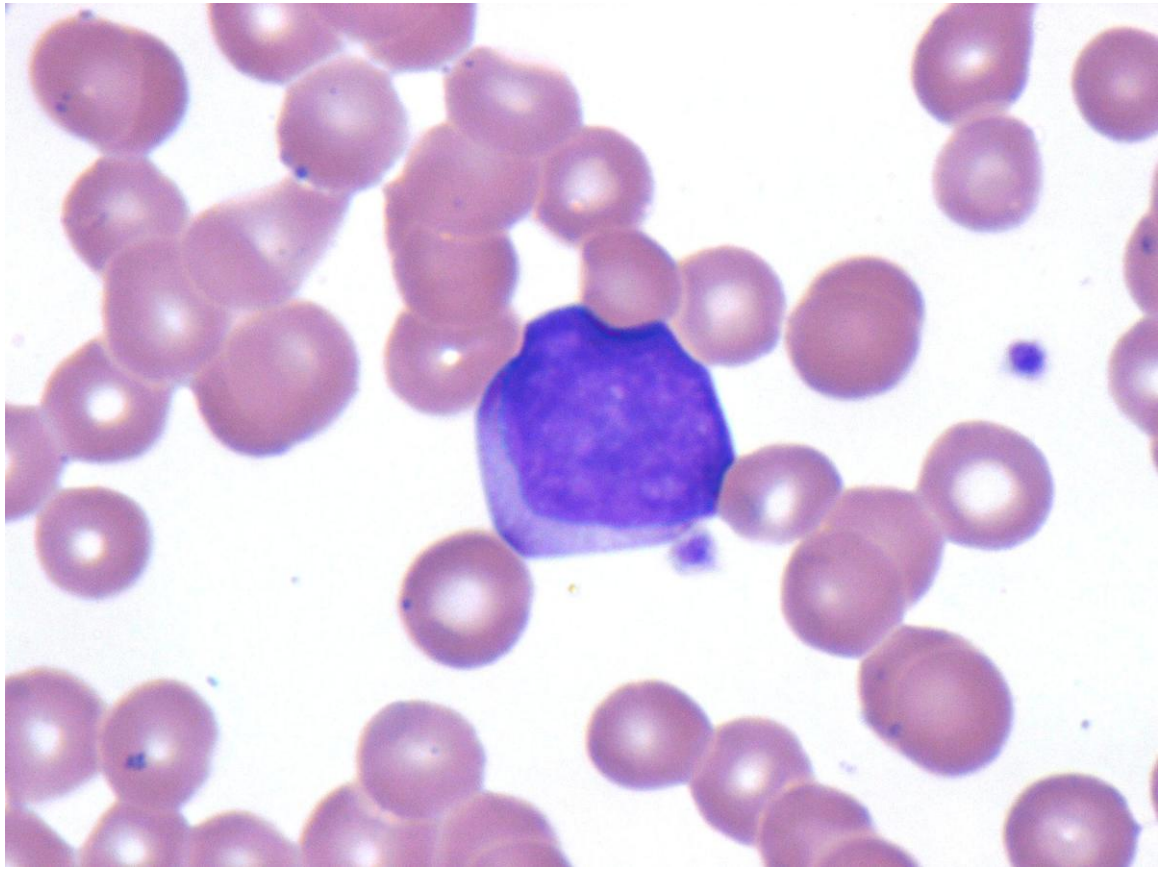
Peripheral Blood Smear

Blasts 23%



Peripheral Blood Smear (cont'd)

Blasts 23%



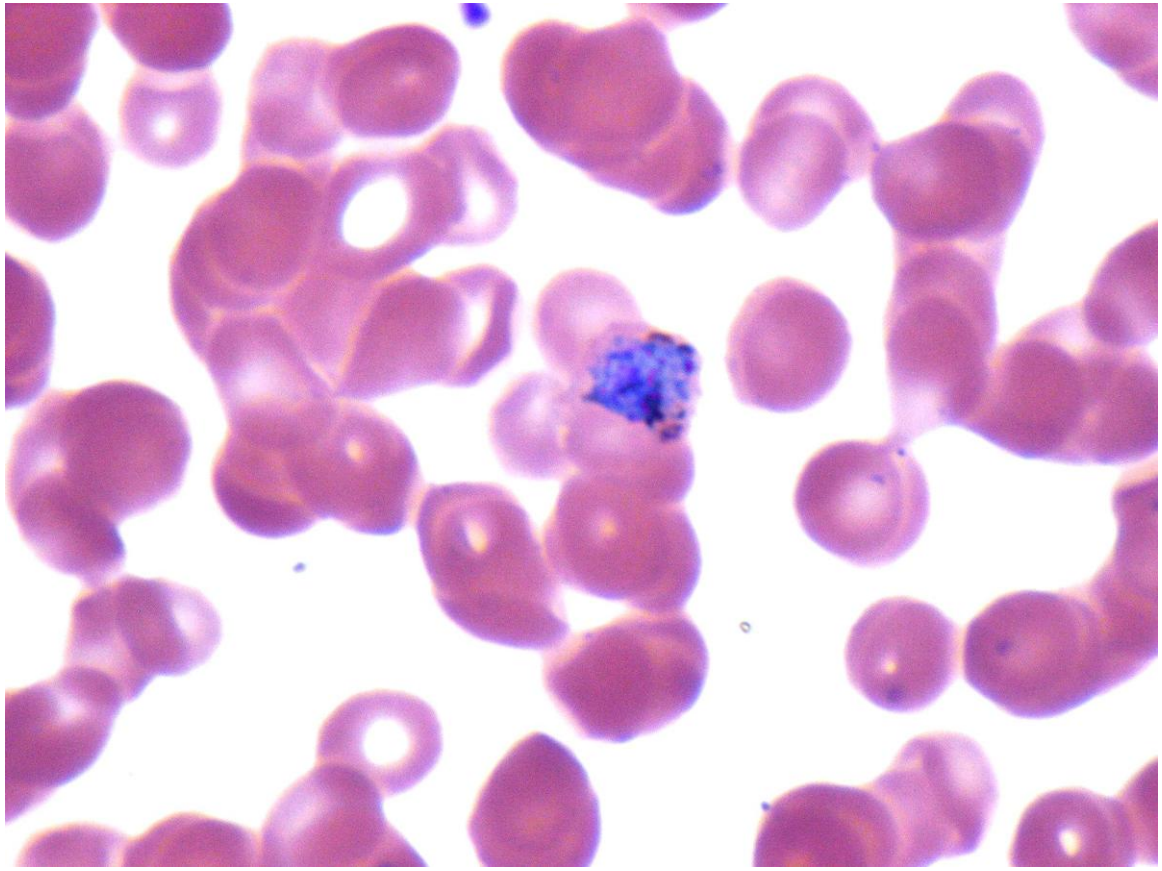
Diagnosis

- Acute leukemia
- Patient was transferred to MDA

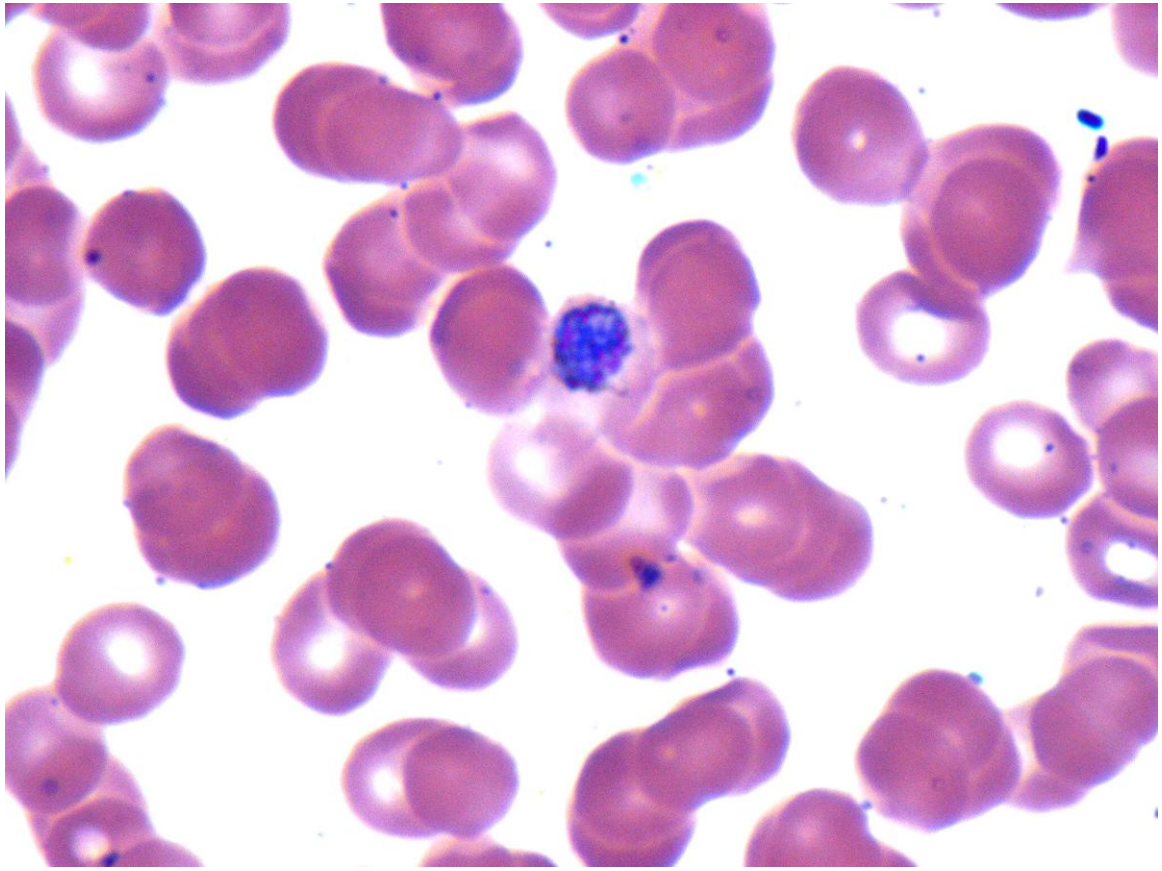
Peripheral Blood Smear Case
Patient: McDxxx

- 31 year-old male presented with fever (103), weakness.
- Patient works as a journalist, traveled to several African country in Nov 2002. Patient was infected with malaria at that time and was treated. Patient had recent episodes of fever, treated with antibiotics (doxycycline). Recent peripheral blood smear was negative for organisms.
- Hgb= 14.0, Plt=44, MCV 85

Peripheral Blood Smear



Peripheral Blood Smear (cont'd)



Diagnosis

- Plasmodium Vivax (recurrent infection due to liver phase of plasmodium)
- Parasitic load < 1%
- Previous treatment did not eradicate liver phase of P. Vivax
- Typical Tx:
  P. falciparum: chloroquine (non-resistent)
  quinine, quinidine, or mefloquine (resistant)
  add RBC exchange for severe infection

  P. Vivax: chloroquine, then primaquine