

Pathobiology

Malignant Hematology Cases

October 31, 2023

Case A

- Hx: A 2 year old boy presents to a pediatrician after his mother notes that he has been more lethargic and pale for the past week. He has vomited two times and has been running a fever.

Case A

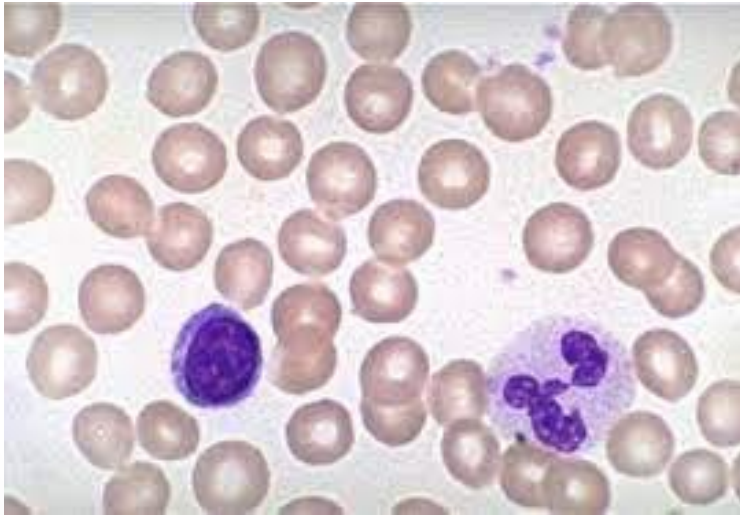
- Px: On physical examination, he was pale, bruises were noticed over the arms, legs and trunk, and a petechial rash was present over both lower extremities from the knees down. The chest was clear to auscultation. The liver and spleen were both easily palpable 5 cm below the costal margins. Sternal tenderness was present. There was adenopathy in the axilla and inguinal regions.

Case A

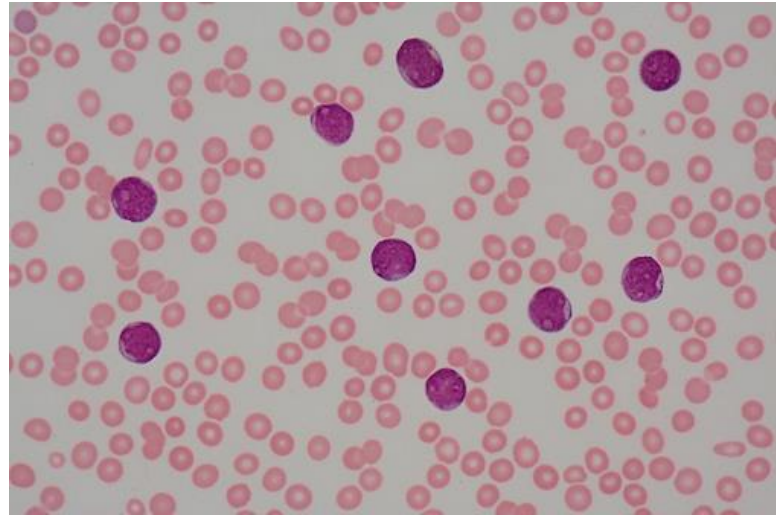
- Px: On physical examination, he was **pale**, **bruises** were noticed over the arms, legs and trunk, and a **petechial rash** was present over both lower extremities from the knees down. The chest was clear to auscultation. The **liver and spleen were both easily palpable 5 cm** below the costal margins. **Sternal tenderness** was present. There was **adenopathy** in the **axilla** and **inguinal** regions.

Peripheral Blood Smear

Normal



Patient



Case A

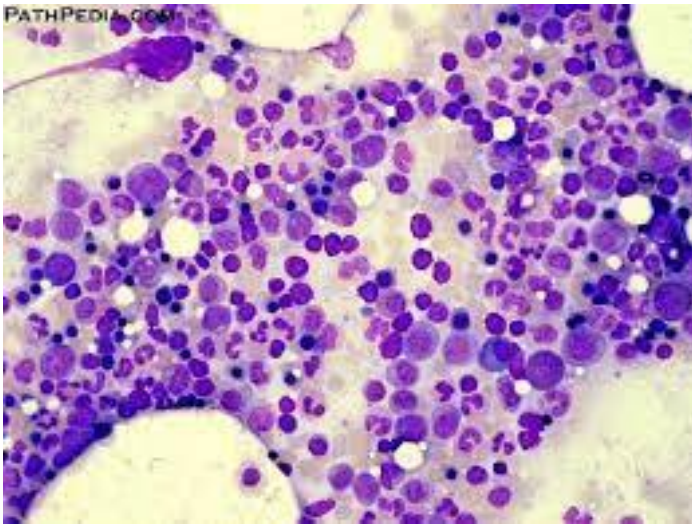
Complete Blood Count (CBC) showed:

- Hemoglobin (Hgb) 7.1 gm/dl (normal 10.5-12.7)
- White Blood Cell Count (WBC) 55 (normal 5-11)
- Platelet count 17 (normal 150-450)

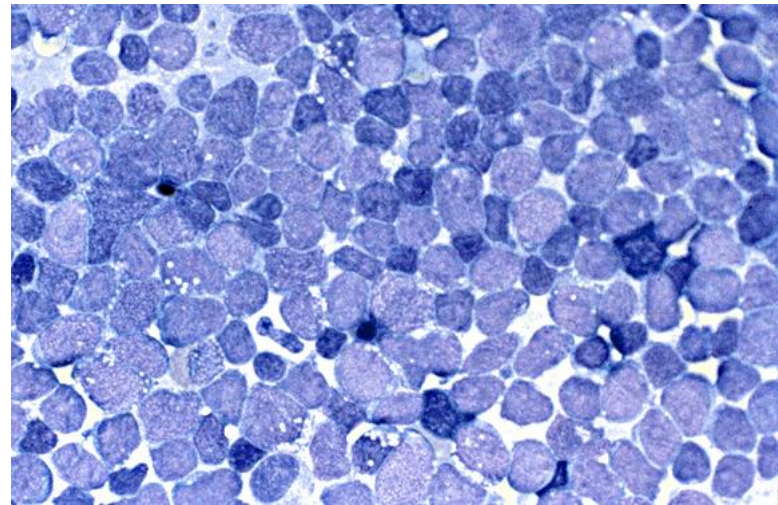
- . Q1. What lab abnormalities are present?

Bone Marrow Aspirate Smear

Normal

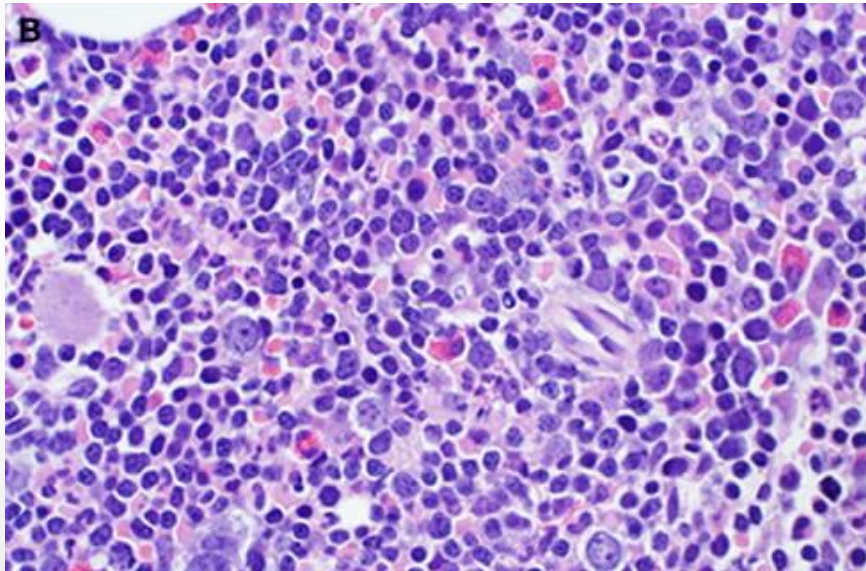


Patient

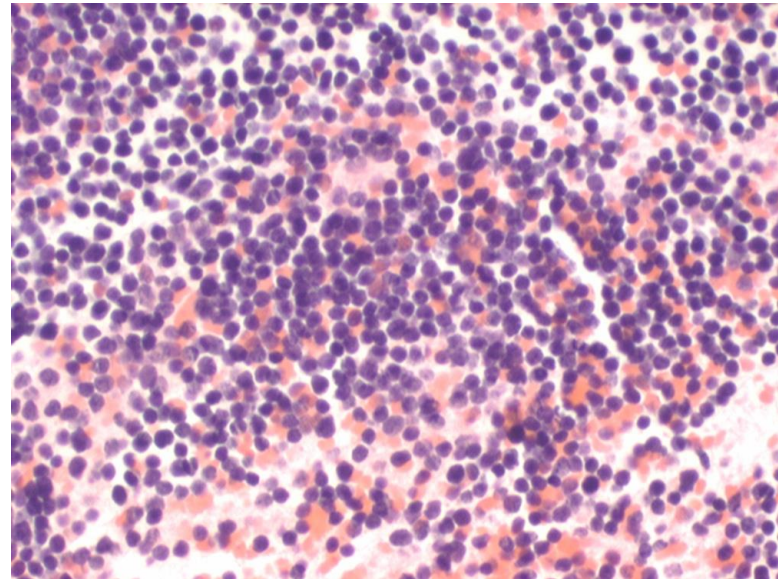


Bone Marrow Biopsy

Normal Toddler

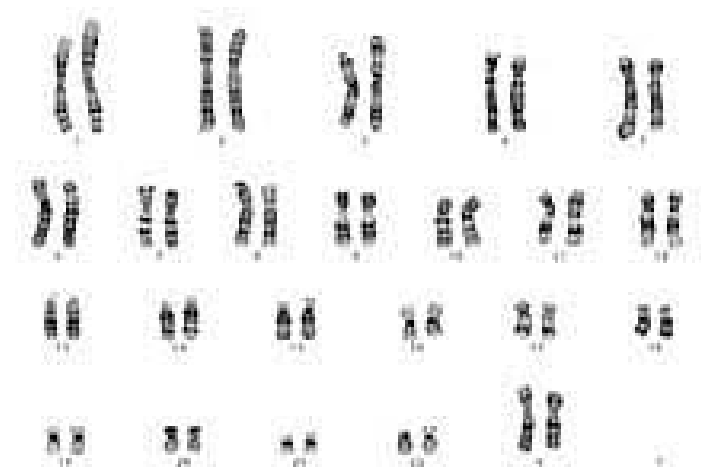


Patient

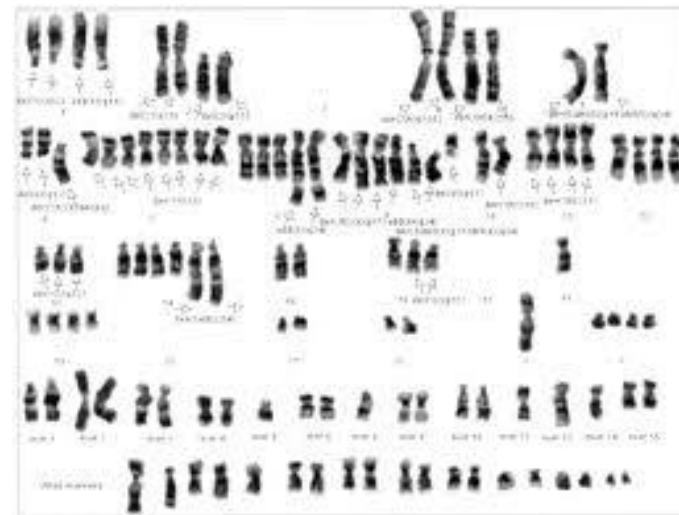


Case 32--Karyotype

Normal



Patient



Case A

- Q2. Is it a benign process?
- Q3. If this is leukemia, is it acute or chronic?
- Q4. What kind of leukemia is most common in this age group?
- Q5. How should the patient be treated?
- Q6. What is the patient's prognosis?

Case B

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Case B

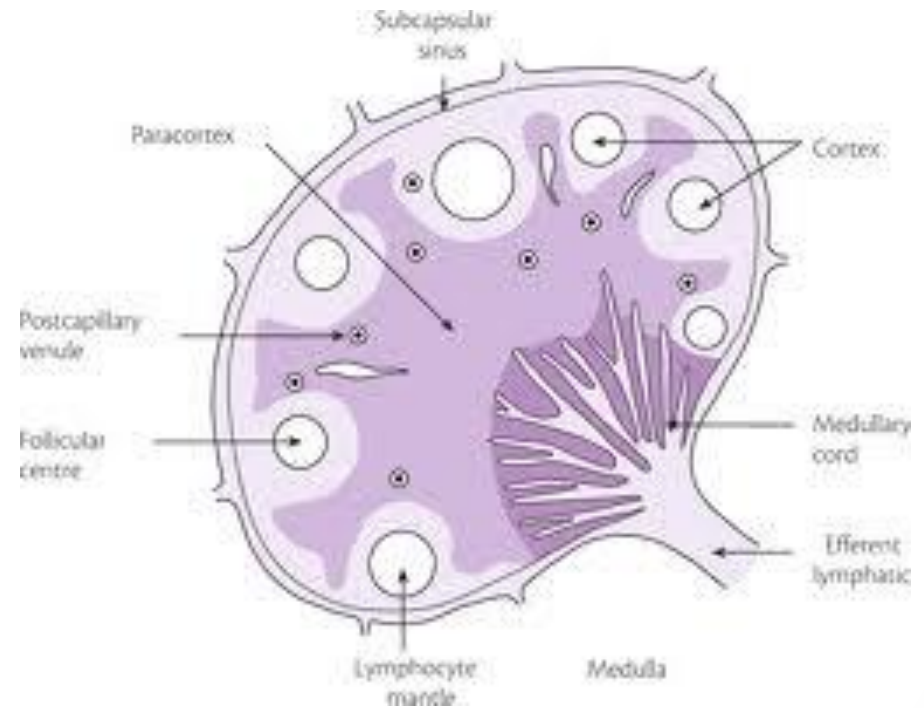
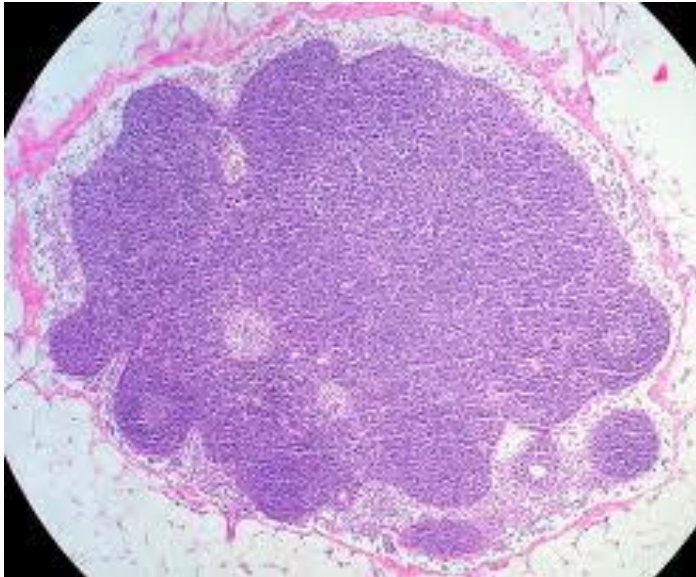
- Px: On exam he has a 3 X 3 cm., non-tender left supraclavicular node which is mobile and rubbery in texture. He also has a 2 X 1 cm. right axillary node, and a 3 cm bilateral inguinal nodes. A spleen tip is palpable 3 fingerbreadths below the costal margin. The remainder of the exam is normal. He weighs 180 pounds.

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Case B

- Review normal LN architecture



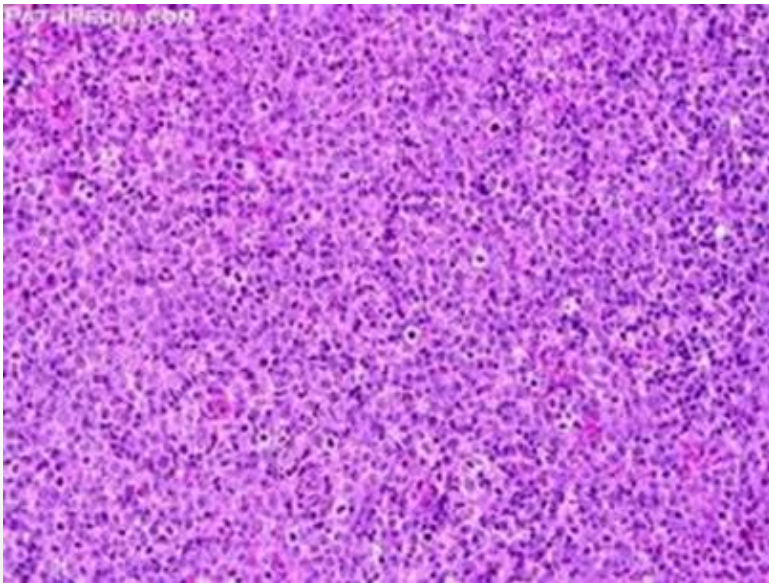
Sections from Patient's Biopsy

The patient is evaluated further:

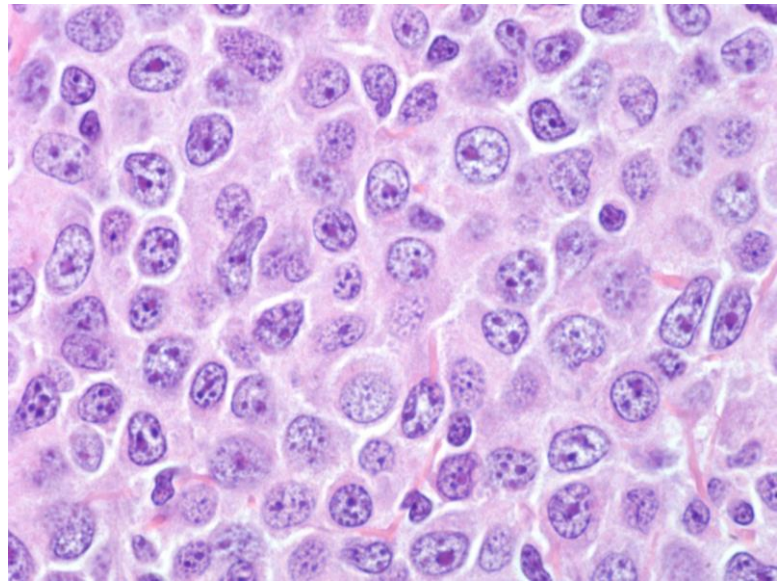
A CBC is normal. The differential is normal. A PPD is nonreactive, a mono spot is negative, HIV titer is negative.

A lymph node biopsy is performed

Low Power



High Power



Case B

- Immunophenotypic studies reveal this to be a tumor of B lymphocytes.
- Q1. What is the diagnosis?
- Q2. How should the patient be treated?

Case C

- Hx: A 52 year old African American woman presents to the ER with the complaint of severe back pain. She had visited the Carowinds amusement park where she went on the freefall ride, dropping 3 stories in 10 seconds. She felt something “pop” in her back, and she is now moaning in severe pain. She takes no medications, has no significant past history, and does not drink, smoke, or use drugs.

Case C

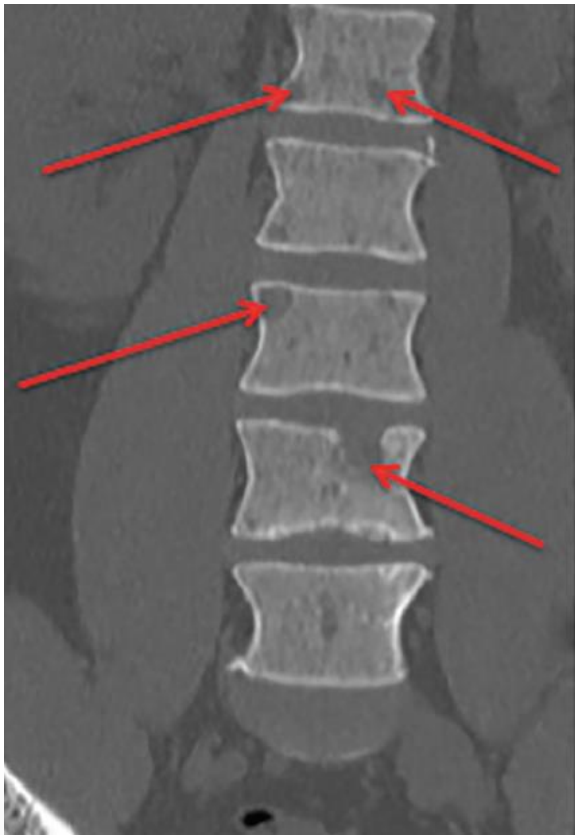
- Hx: A 52 year old African American woman presents to the ER with the complaint of **severe back pain**. She had visited the Carowinds amusement park where she went on the freefall ride, dropping 3 stories in 10 seconds. **She felt something “pop” in her back**, and she is now **moaning in severe pain**. She takes no medications, has no significant past history, and does not drink, smoke, or use drugs.

Case C

- Px: severe pain to palpation over her low thoracic and lumbar vertebrae.
- Laboratory tests include:
 - CBC: Hgb 11.7 (12-14)
 - WBC 5 (4-10)
 - Platelets: 224 (150-450).
 - Her BUN is 45 (10-20)
 - Her creatinine is 2.3 (0.6-1).
- X-rays of her spine show compression fractures and lytic lesions

Bone Lesions

Lytic lesions



Compression fracture



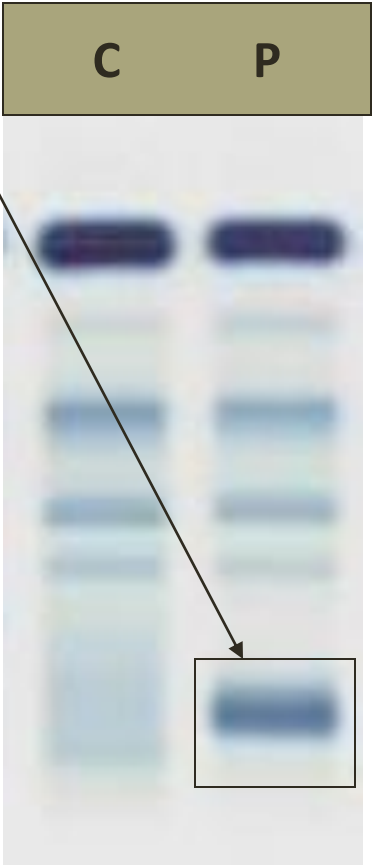
Case C

- The patient's serum protein electrophoresis shows a monoclonal spike. Review this with the instructor. Also, review the peripheral blood smear.

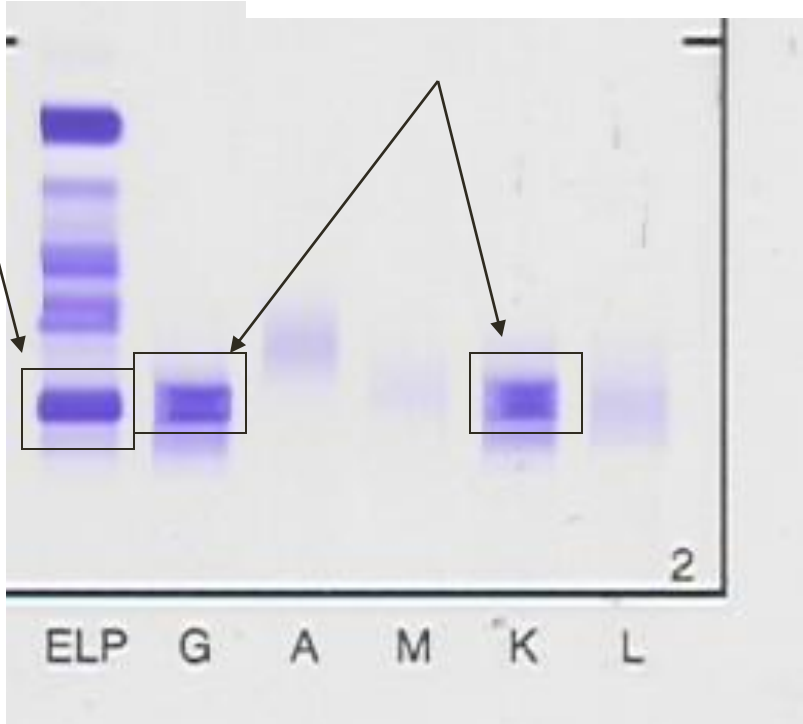
Case C—SPEP and immunofixation

SPEP

Abnormal band in the gamma region



Abnormal band in the gamma region by electrophoresis

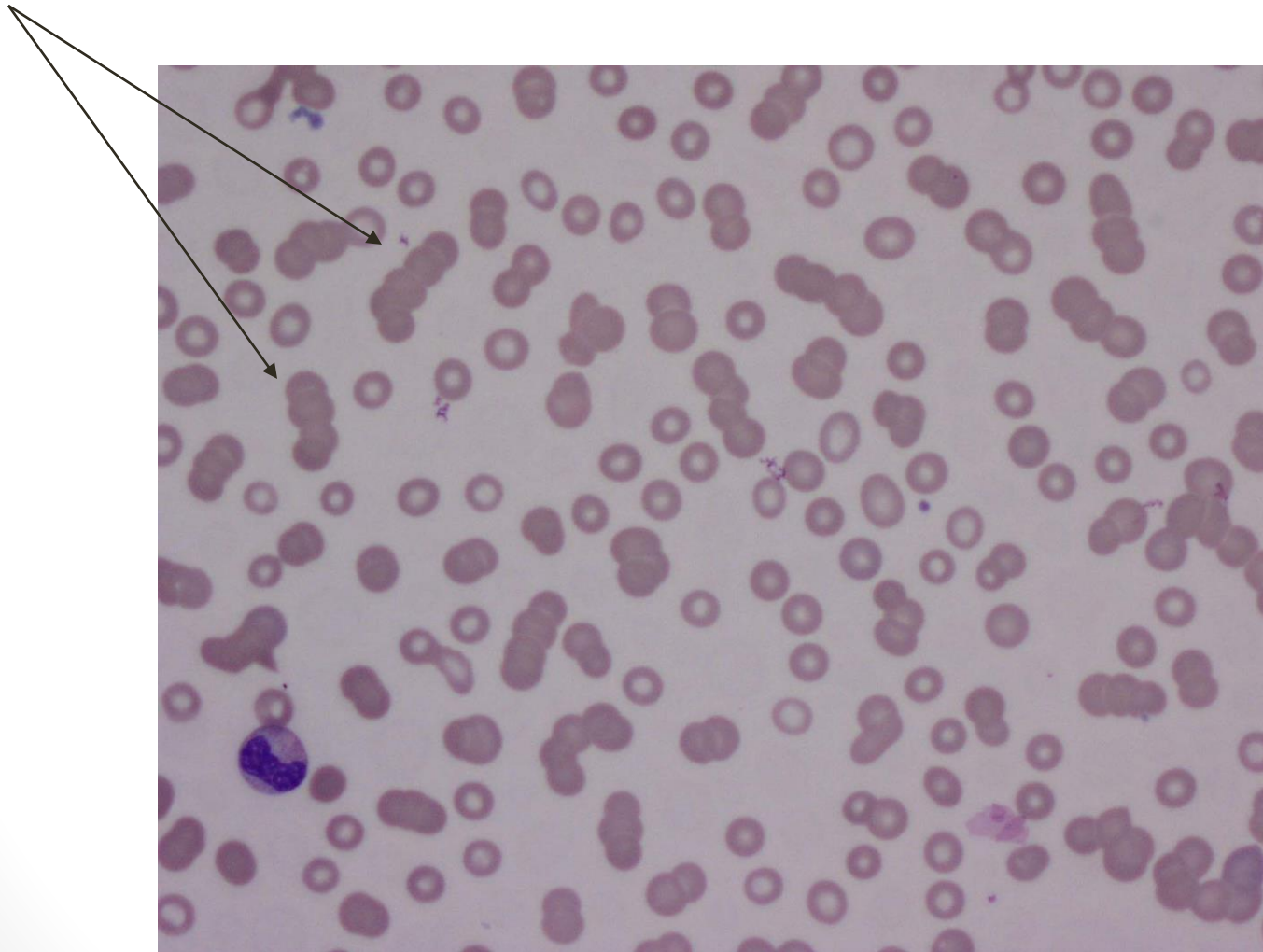


Immunofixation

This band is present in the IgG lane and in the kappa lane. It is thus monoclonal

Lanes G, A, and M refer to specific staining for IgG, IgA, and IgM. Lanes K and L refer to staining for kappa or lambda

Case C--Peripheral blood smear

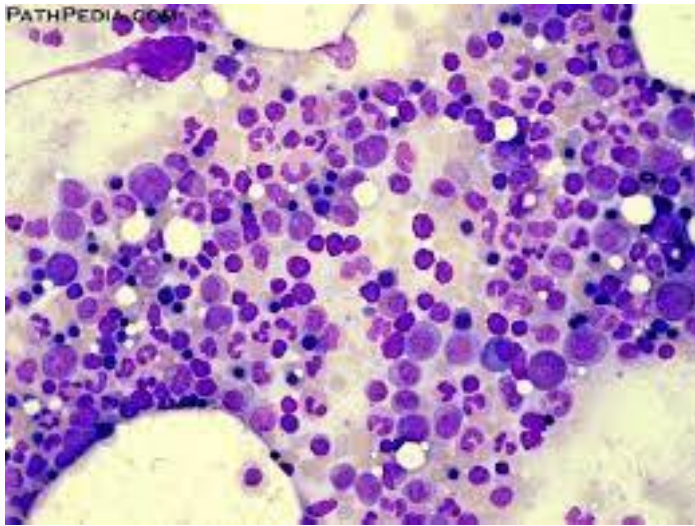


Almost all the cells here are plasma cells

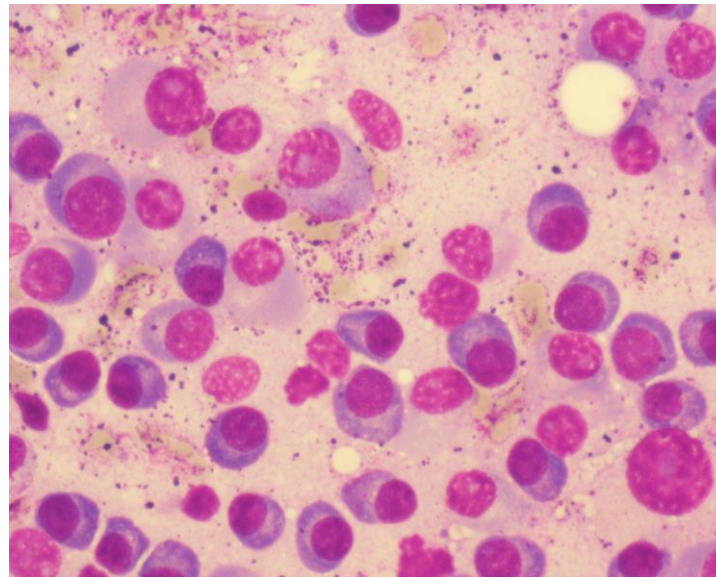
Case C

Bone marrow aspirate

Normal Bone Marrow



Patient's Bone Marrow



Case C

- The patient is found to have an IgG kappa paraprotein of 7.8 g/dl with free kappa chains in the urine. The marrow shows 45% plasma cells. X-rays of the symptomatic bones show lytic lesions.
- Q1. What is the patient's diagnosis?