# The Case of Patient AB

Brandy Shattuck, MD
PGY-2
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# Initial Presentation 11/03/08

- 54 year old Hispanic male
- **CC:** dizziness, weakness, headache
- **PMH:** Polycythemia Vera (diagnosed 6 months prior at outside hospital)
- **PSH:** None
- **Medications:** ASA 81mg, Hydrea 500mg
- **SH:** - Tobacco, remote history of ETOH, recent travel to Mexico
- **ROS:** Blurred vision, weight loss
- **PE:** Mild hepatomegaly, no splenomegaly, normal neurologic exam

# Labs and Imaging

- **Electrolytes:** WNL
- **Erythropoietin:** decreased
- **Cardiac enzymes:**
  - CK 16 (ref <191)
  - Troponin T: .120 ng/ml (ref < 0.1)
- **CXR:** WNL
- **MRI Brain:** WNL
- **Echo:** LVH
- **EKG:** ST depressions
  - 2, 3, AVF
  - Lateral precordial

# Labs, continued

- **CBC**
  - WBC: 24.8
  - HB: 17.6
  - HC: 53.9
  - Plat: 164
  - MCV: 91.1
  - RDW: 24.2
- **Diff (%)**
  - N: 35
  - B: 0
  - L: 10
  - M: 3
  - E: 51
- **Coag**
  - PT: 14.6
  - PTT: 35.0
  - INR: 1.3

# Clinical Plan

- Consult Cardiology
  - No evidence of MI
- Consult Neuro
  - No focal cause of dizziness
- Consult ID
  - Check for parasites
- Consult Hematology
  - Assess increased eosinophils with Bone Marrow Aspirate & Biopsy

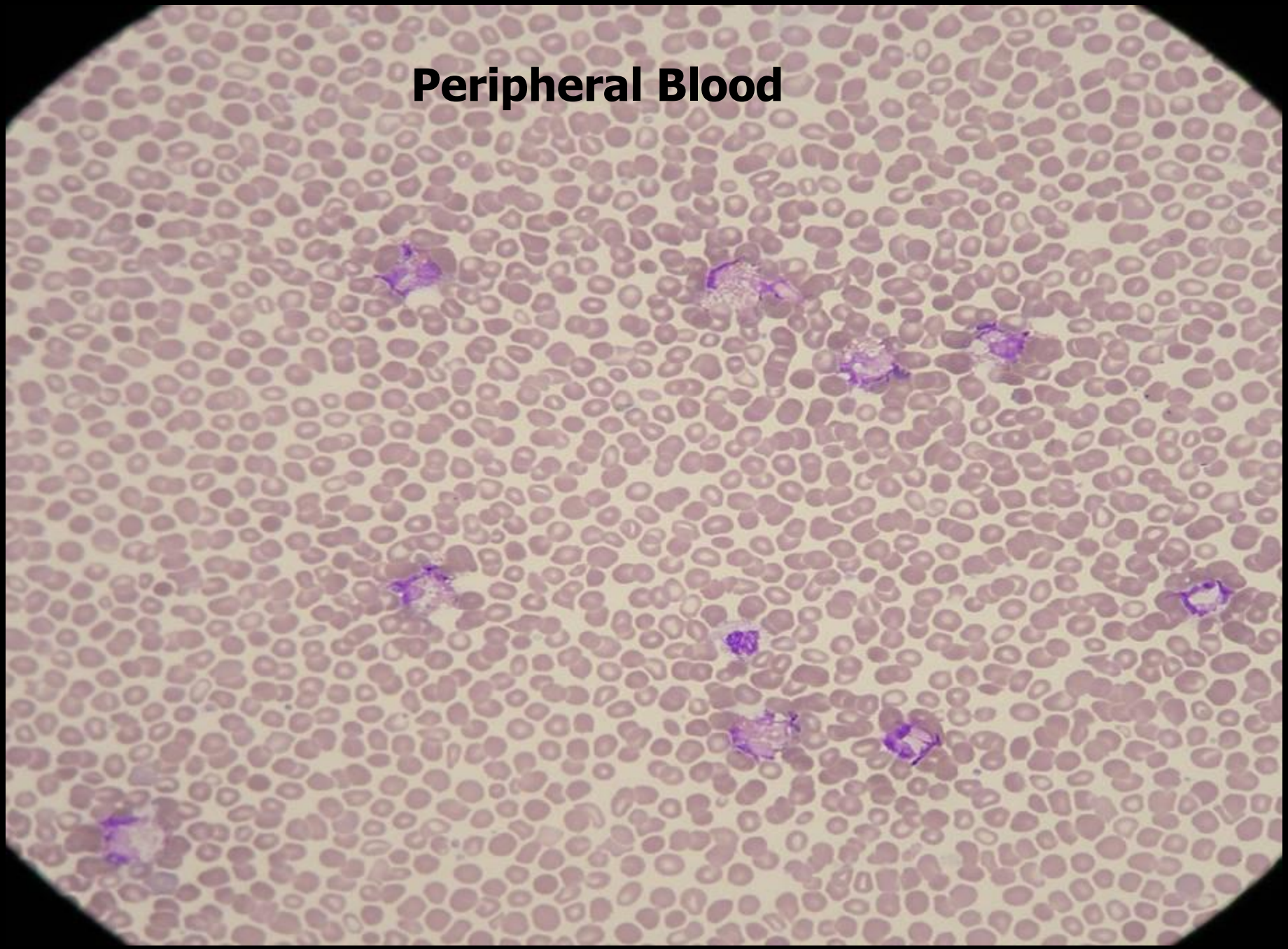
# Bone Marrow Aspirate & Biopsy

- Bone marrow performed after therapeutic phlebotomy
- Patient on Hydrea one week prior to bone marrow

# Peripheral Blood

- Erythrocytosis
- Marked leukocytosis with eosinophilia

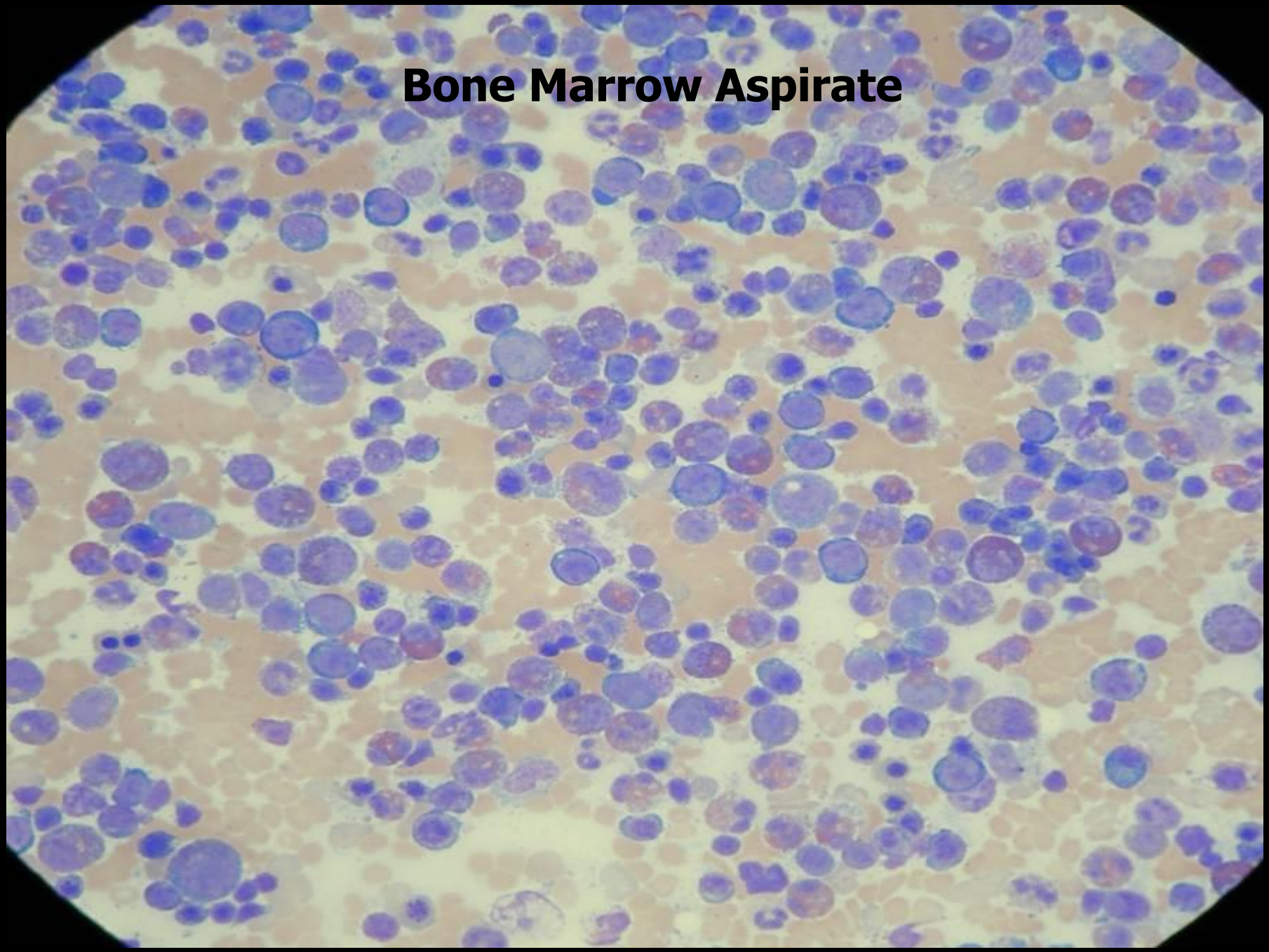
# Peripheral Blood



# Bone Marrow Aspirate Differential

- Myeloblasts: 3%
- Promyelocytes: 6%
- Myelocytes: 4%
- Metas: 2%
- Bands & PMN's: 14%
- Eos: 28%
- Baso: 3%
- Monos: 4%
- Lymphs: 3%
- Plasma cells: 2%
- Erythroids: 31%

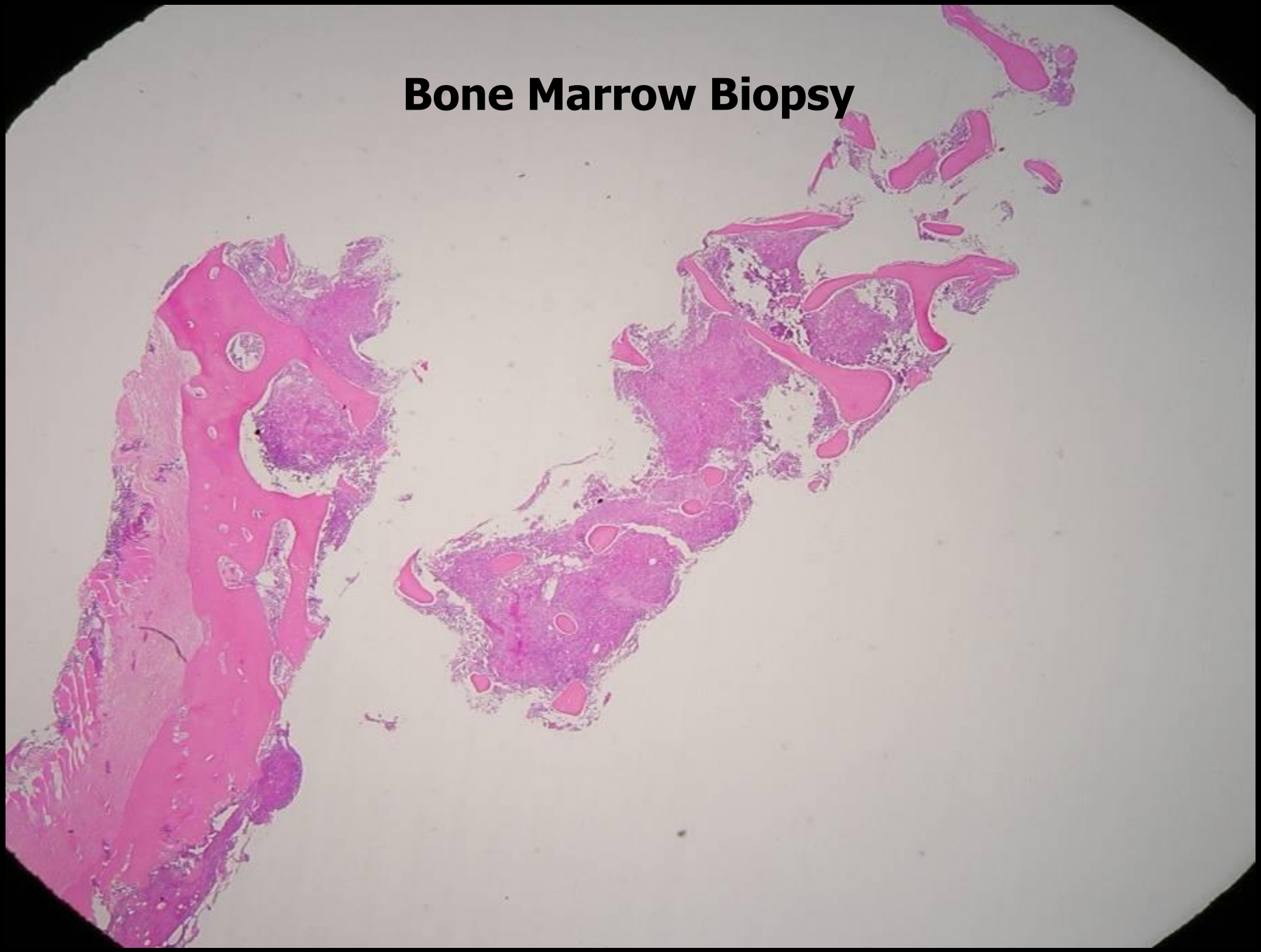
# Bone Marrow Aspirate



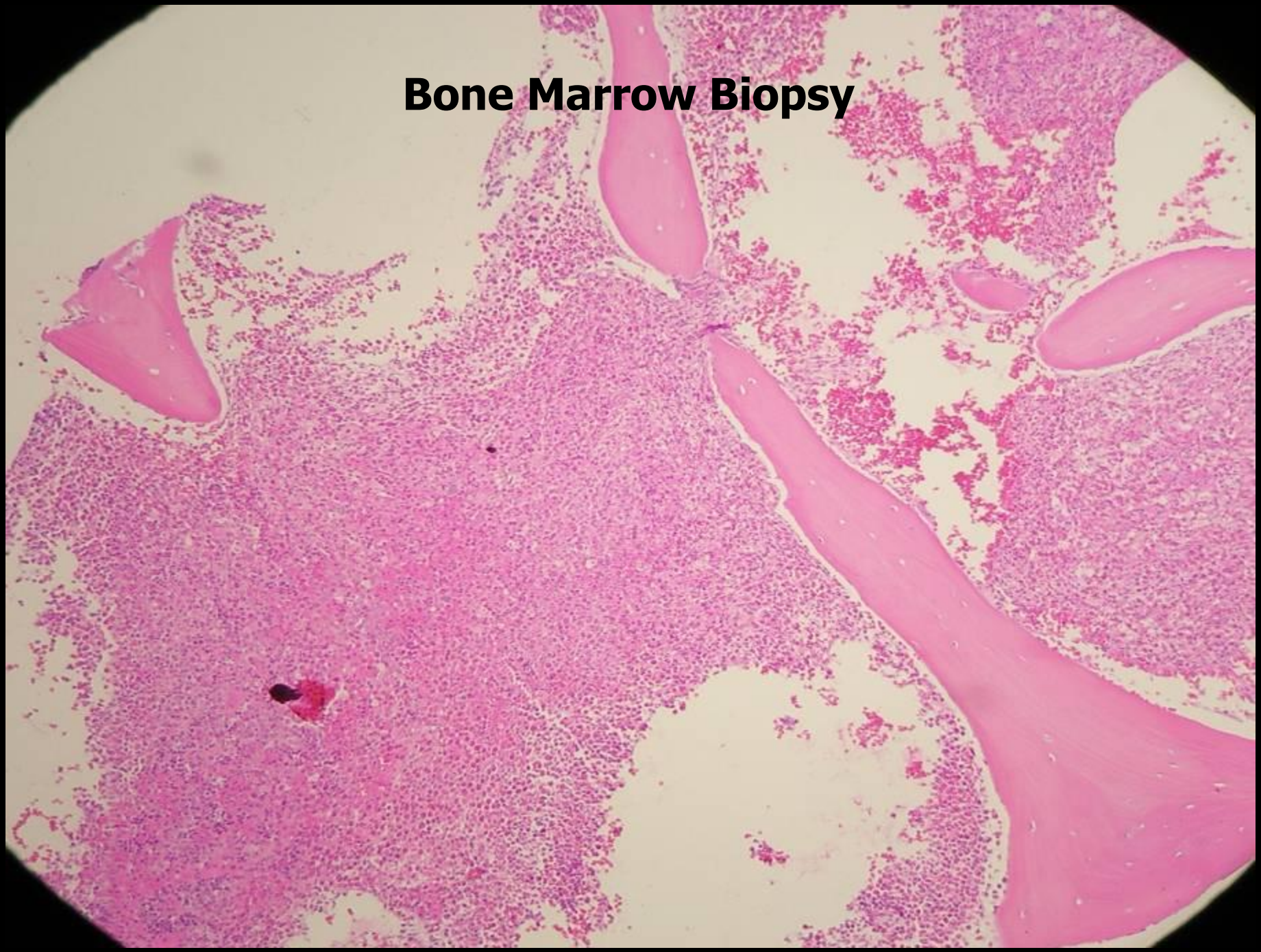
# Bone Marrow Biopsy

- Marked increase in eosinophils
- Marked increase in mast cells
- Marked reticulin fibrosis
- Absent iron stores

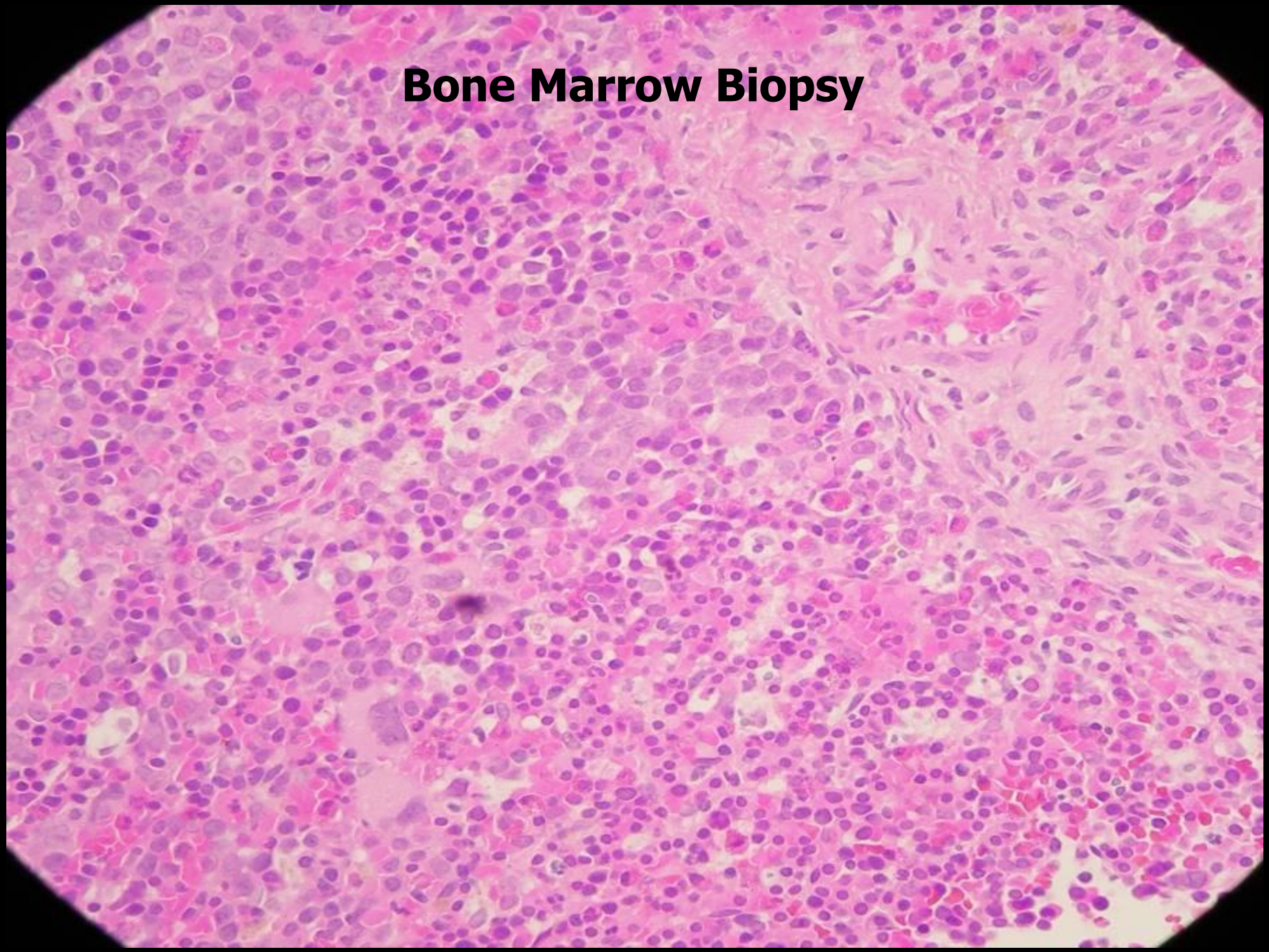
# Bone Marrow Biopsy



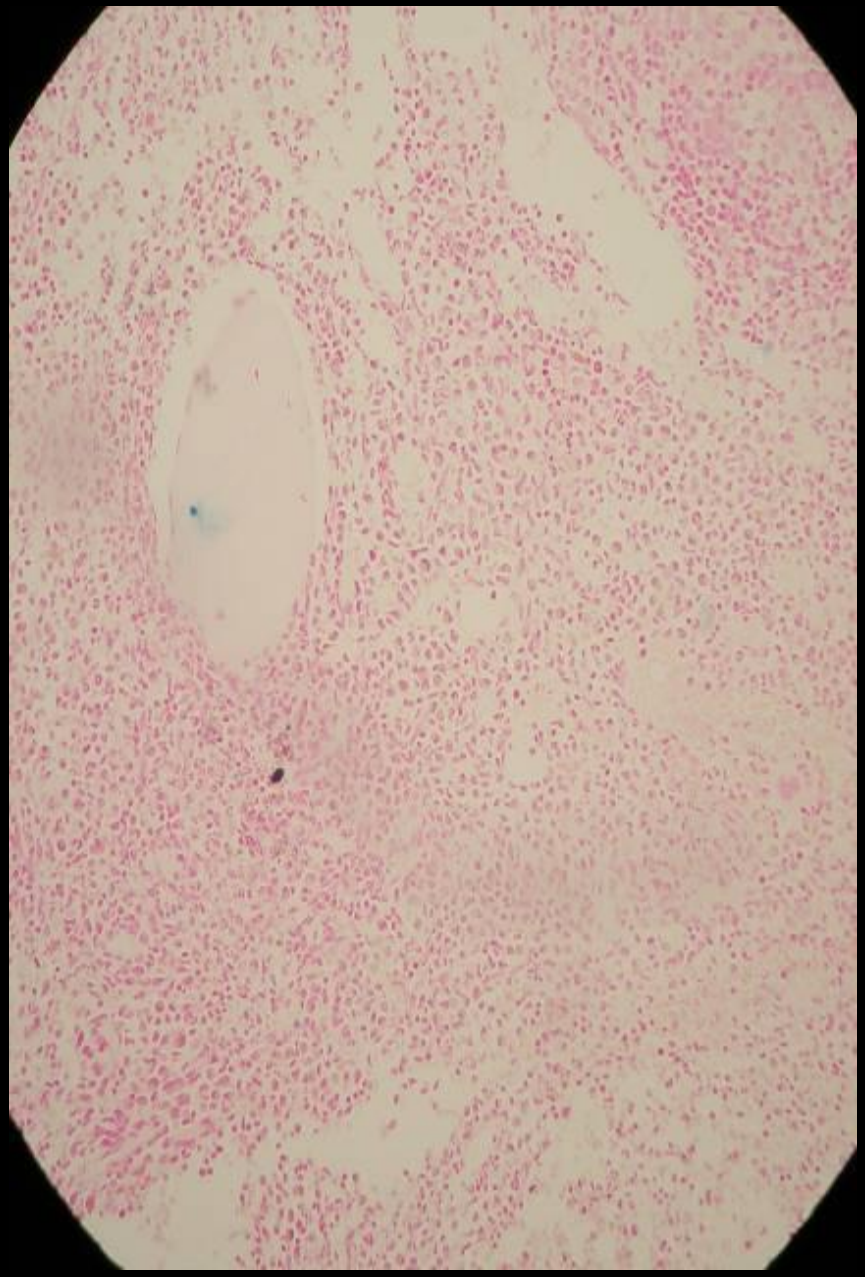
# Bone Marrow Biopsy



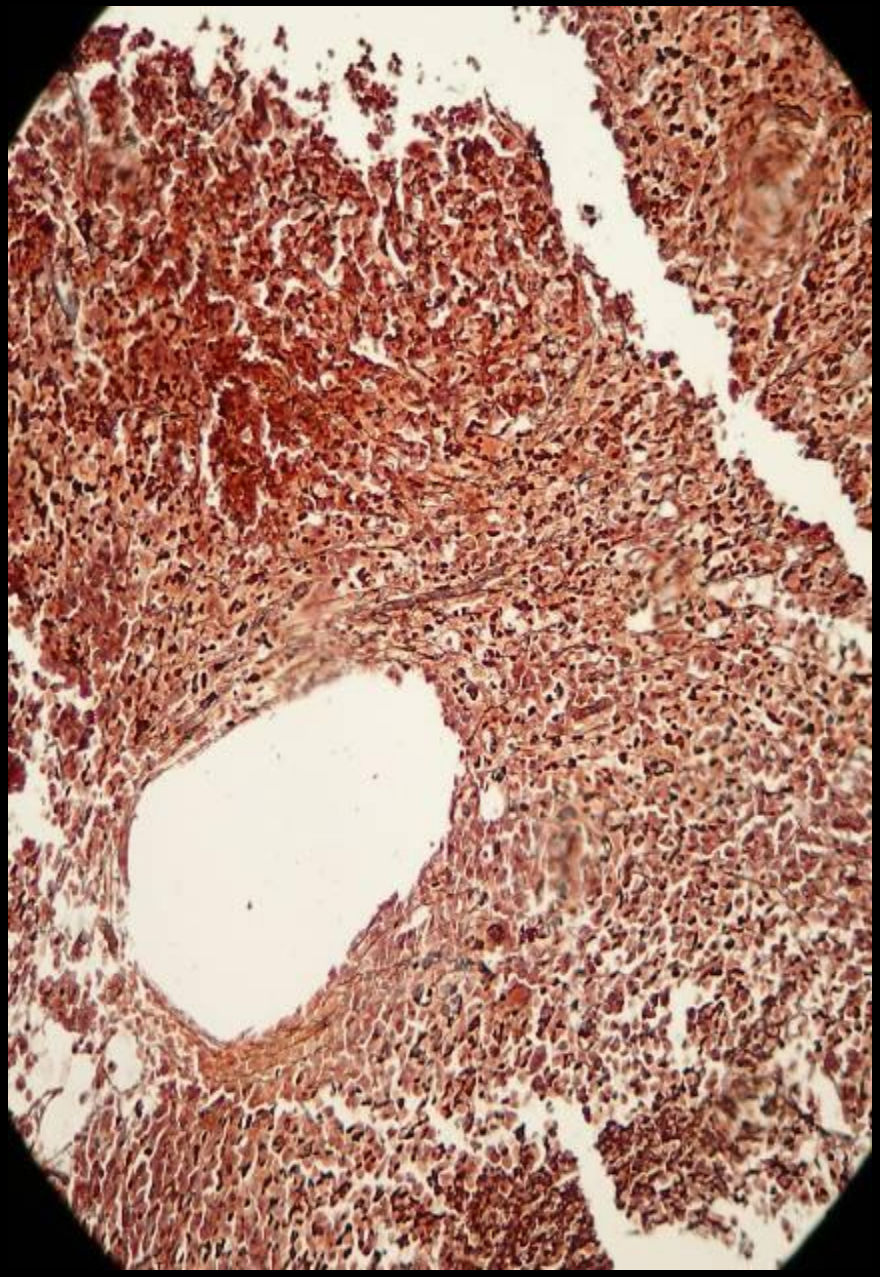
# Bone Marrow Biopsy

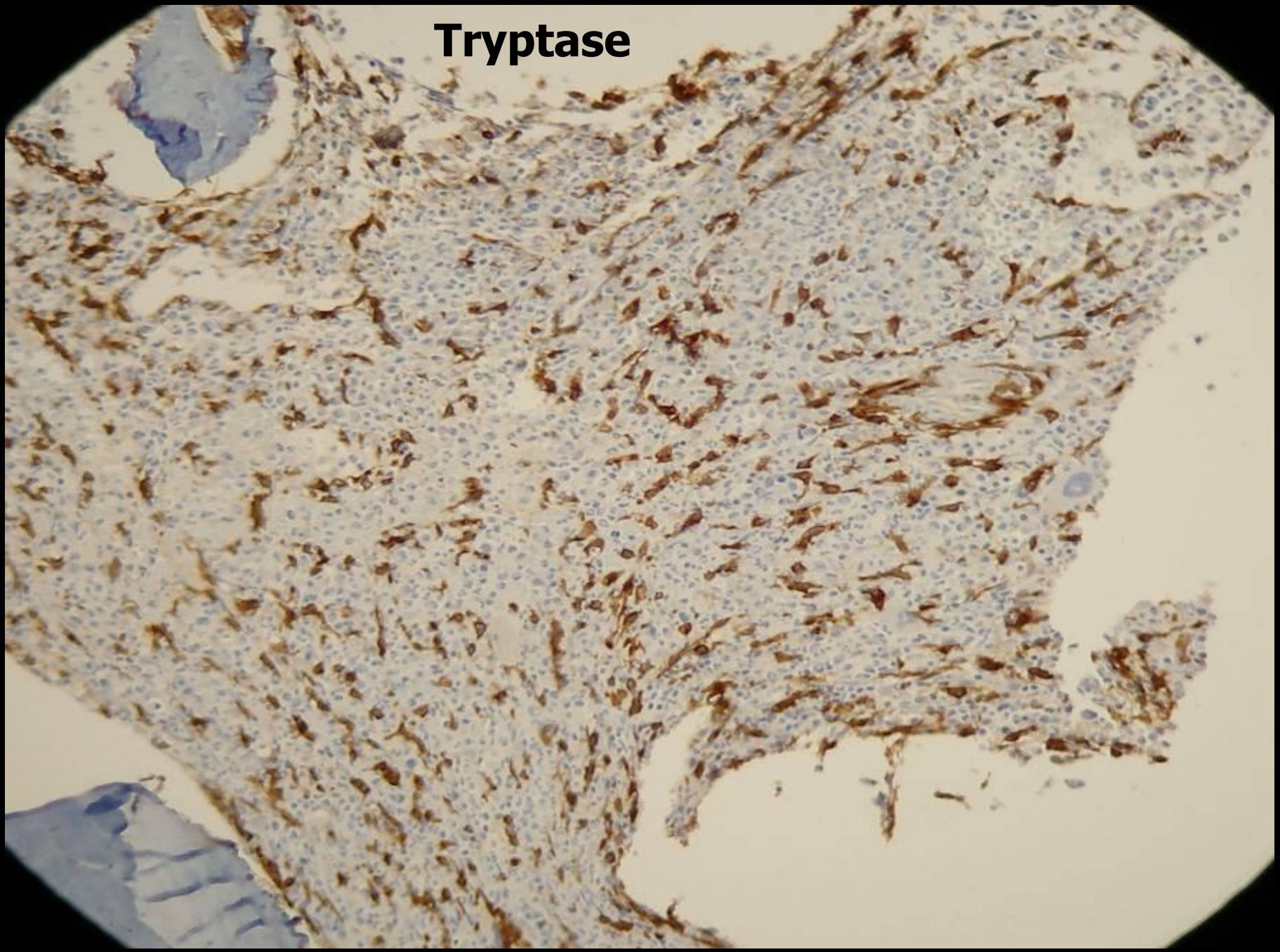


Iron



Reticulin




Tryptase

# Differential Diagnosis

- Parasitic infection
- Medication effect
- Autoimmune diseases
- Myleoproliferative Neoplasm with increased eosinophils
- Systemic Mastocytosis
- CMML with eosinophilia
- Chronic Eosinophilic Leukemia
- Idiopathic Hypereosinophilic Syndrome

# Differential Workup

- Parasitic infection: negative
- Medication effect: negative
- Autoimmune diseases: negative
- Myleoproliferative Neoplasm with increased eosinophils: needs more testing
- Systemic Mastocytosis: negative systemic mast cell involvement
- CMML with eosinophilia: negative (mono < 1.0 x $10^3$/mL)
- Chronic Eosinophilic Leukemia:  confirm with flow cytometry and cytogenics
- Idiopathic Hypereosinophilic Syndrome, NOS: diagnosis of exclusion

# Additional Tests

- Chromosome analysis
- FIP1L1-PDGFRA [del of CHIC2] by FISH
- ETV6-PDGFRB (5q31-33) by FISH
- Flow Cytometry
- JAK-2 V617F, JAK-2 exon 12

# Additional Test Results

- Chromosome analysis: normal 46, XY
- FIP1L1-PDGFRA: positive with loss of CHIC2 (detected by FISH)
- ETV6-PDGFRB (5q31-33): normal (FISH)
- Flow Cytometry: normal (no increase in blasts)
- JAK-2 V617F: negative
- JAK-2 exon 12: not done (clerical error)

# Myeloproliferative neoplasm with increased eosinophils associated with FIP1L1-PDGFRA

- FIP1L1-PDGFRA fusion gene
- Histological findings
  - Increase in eosinophils in peripheral blood and bone marrow
  - Increase in mast cells in bone marrow
  - Reticulin fibrosis in bone marrow
- Patients respond to imatinib mesylate therapy
  - Pardanani et al. Blood. 102 (9): 3093-3096, 2003.
- Presence of this disease in a patient with history and histological findings of polycythemia vera is unusual

# Treatment

- Imatinib mesylate (Gleevec) 200mg daily induction then 100mg maintenance

# Patient Followup 1/20/09

- ROS: morning dizziness, weight gain
- Medications: Gleevec 100mg
- PE: WNL
- CBC:
  - WBC: 7.4, N 63/L 24/ M 6.1/ E 6/ B 0.4
  - Hb: 12
  - Platelet: 243
- Patient in remission

# References


- Pardanani et al. Blood. *CHIC2 deletion, a surrogate for FIP1L1-PDGFRA fusion, occurs in systemic mastocytosis associated with eosinophilia and predicts response to imatinib mesylate therapy*. 102 (9): 3093-3096, 2003.
- Swerdlow, S., et al. WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues. 2008