eha

CMML/MPN Case Presentation

YEOLYAN HEMATOLOGY AND ONCOLOGY CENTER

Karen Meliksetyan, MD

Nothing to disclose

Case Details

68-year-old female presented with the following complaints

- Severe fatigue
- Weight loss (20kg in last 18 moths)
- Vertebral pain
- No major comorbidities

FBC and differential

WBC 2.65 × 10^9/l

RBC 4.36 × 10^{12}/l

Hb 120 g/l

PLT 329 × 10^9/l

NEUT 0.55 × 10^9/l

LYMPH 1.23 × 10^9/l

MON 0.88 × 10^9/l

Monocytes – 17%

Monocytoid immature cells – 12%

Segmented neut. – 17%

Band neut. – 8%

Lymphocytes – 46%

Bone Marrow aspiration

Blastoid cells – 19%
Myelocytes – 1%
Metamyelocytes – 2.5%
Bands – 15%
Segmented neutrophils – 23%
Monocytes – 0%
Lymphocytes – 5%
Erythroblasts – 35%

Dysplastic features:
Presence of multinucleated basophilic and polychromatophilic erythroblasts, 7% ring sideroblasts

Megakaryocytes – not dysplastic

Further BM examination

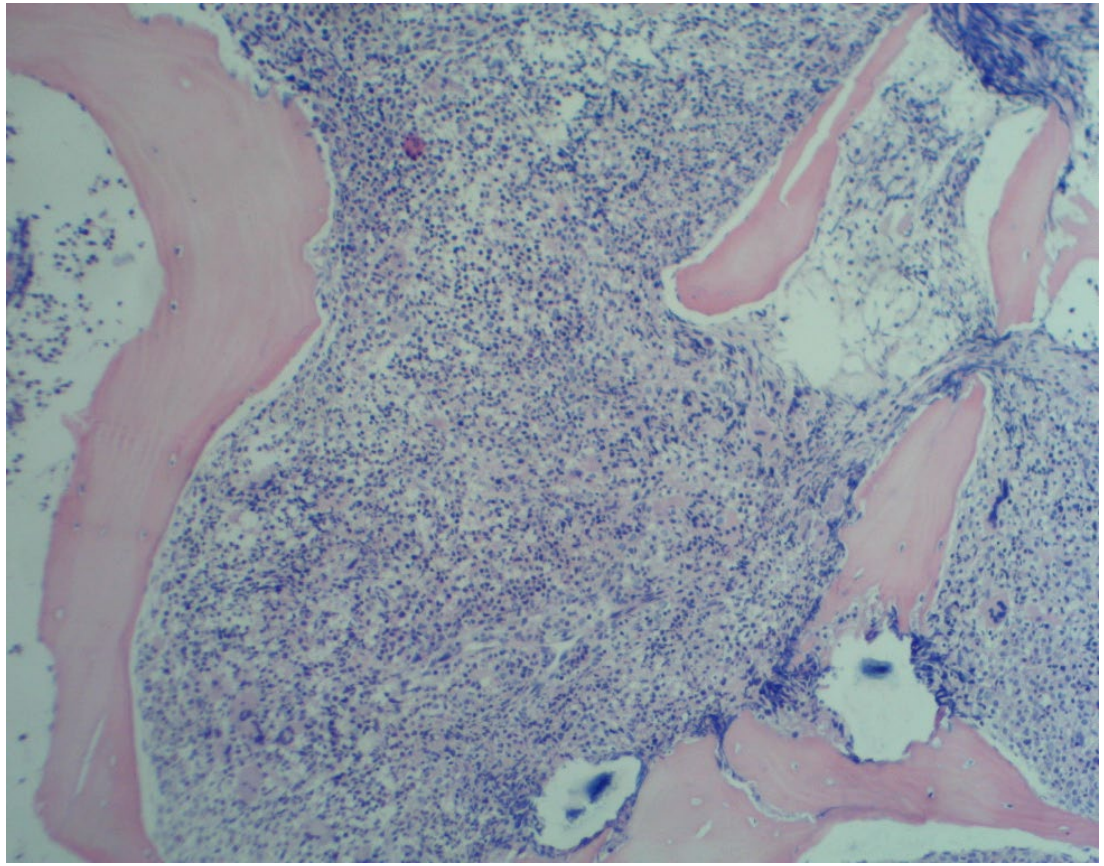
Normal karyotype

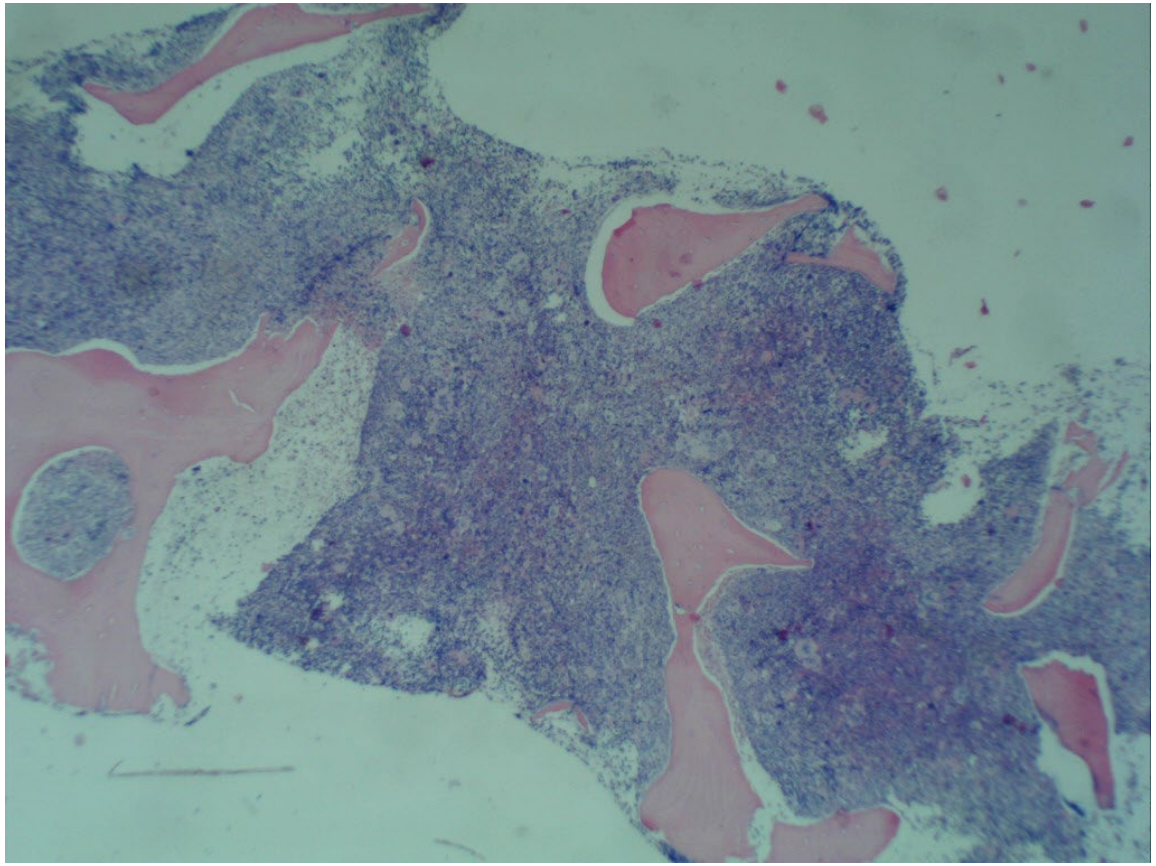
FISH panel for MDS – not remarkable

Flow cytometry of BM – Blast Cells – 1.7%

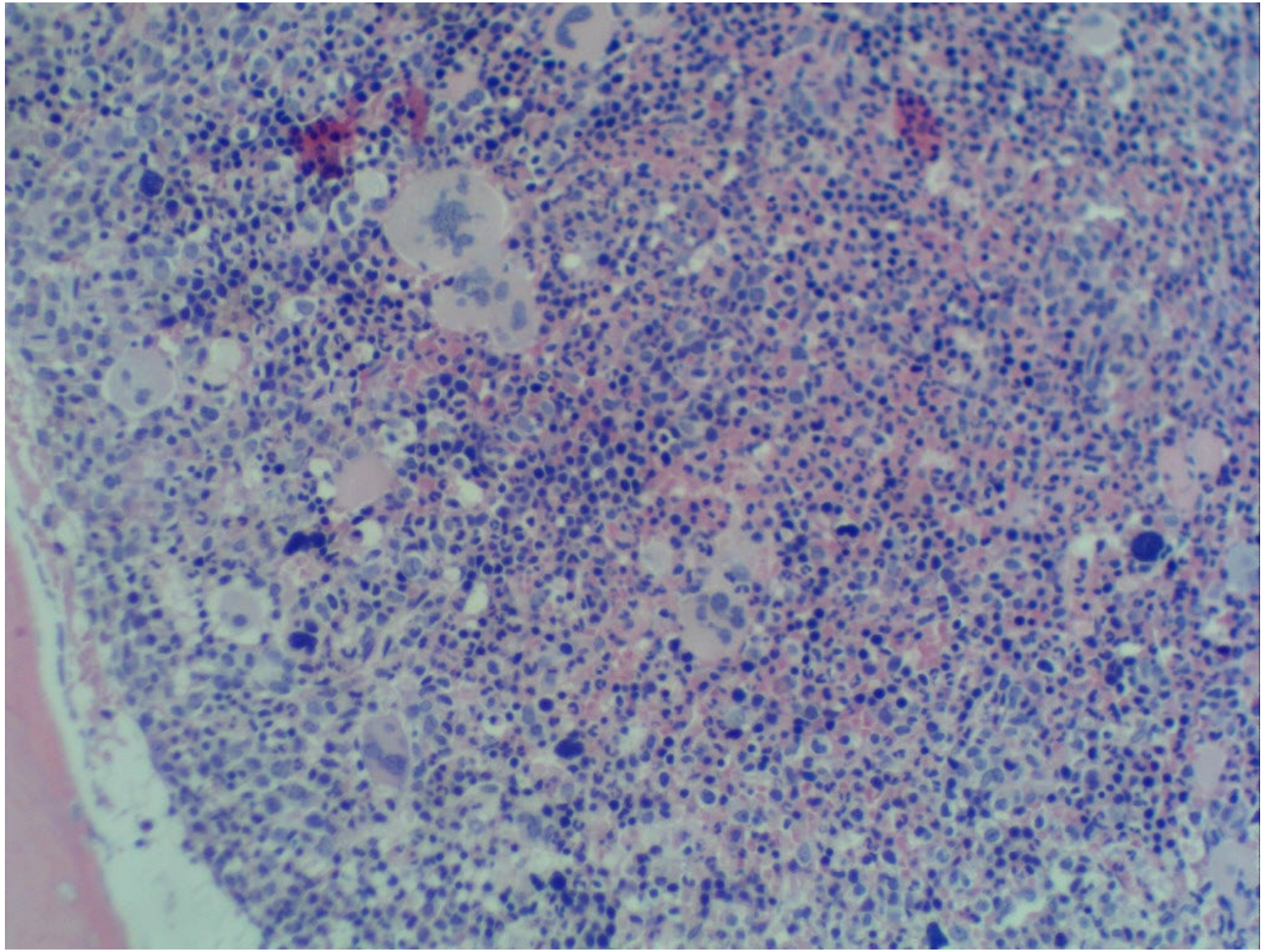
No additional clonal abnormalities

BM biopsy: Hypercellular bone marrow

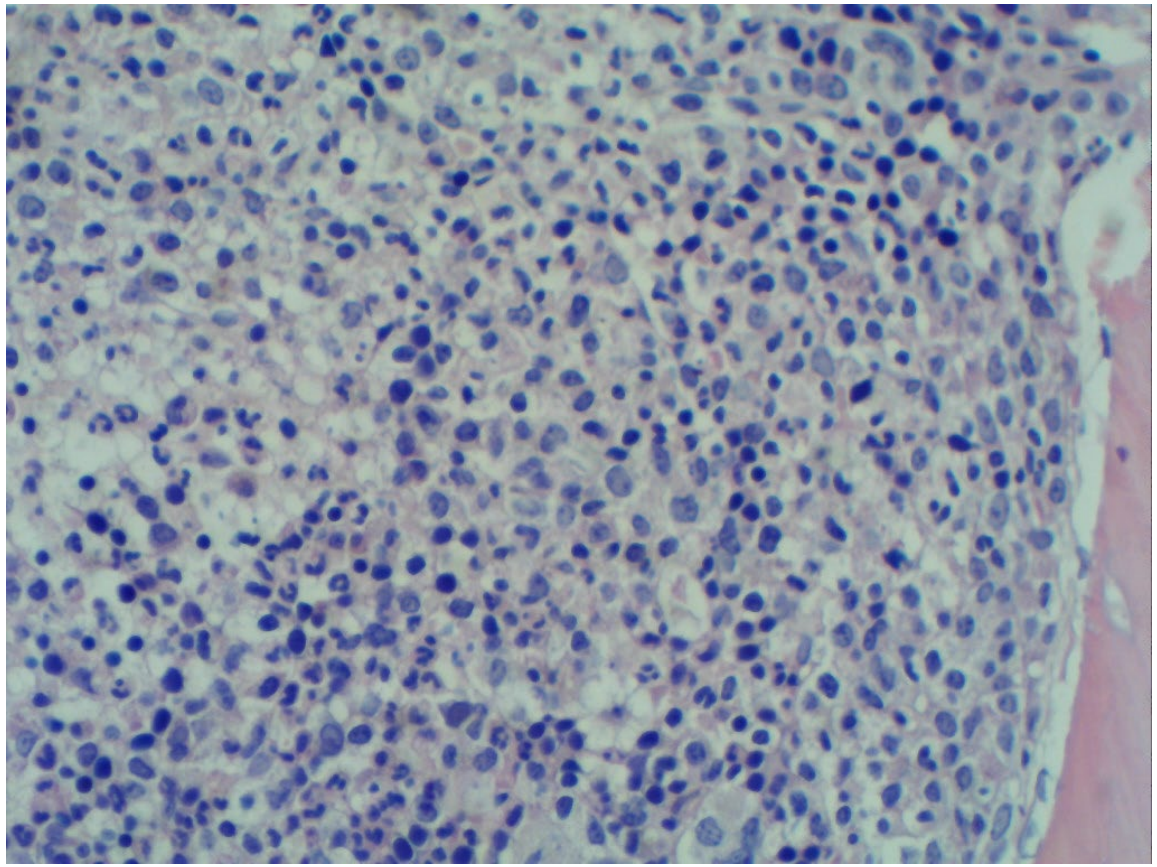


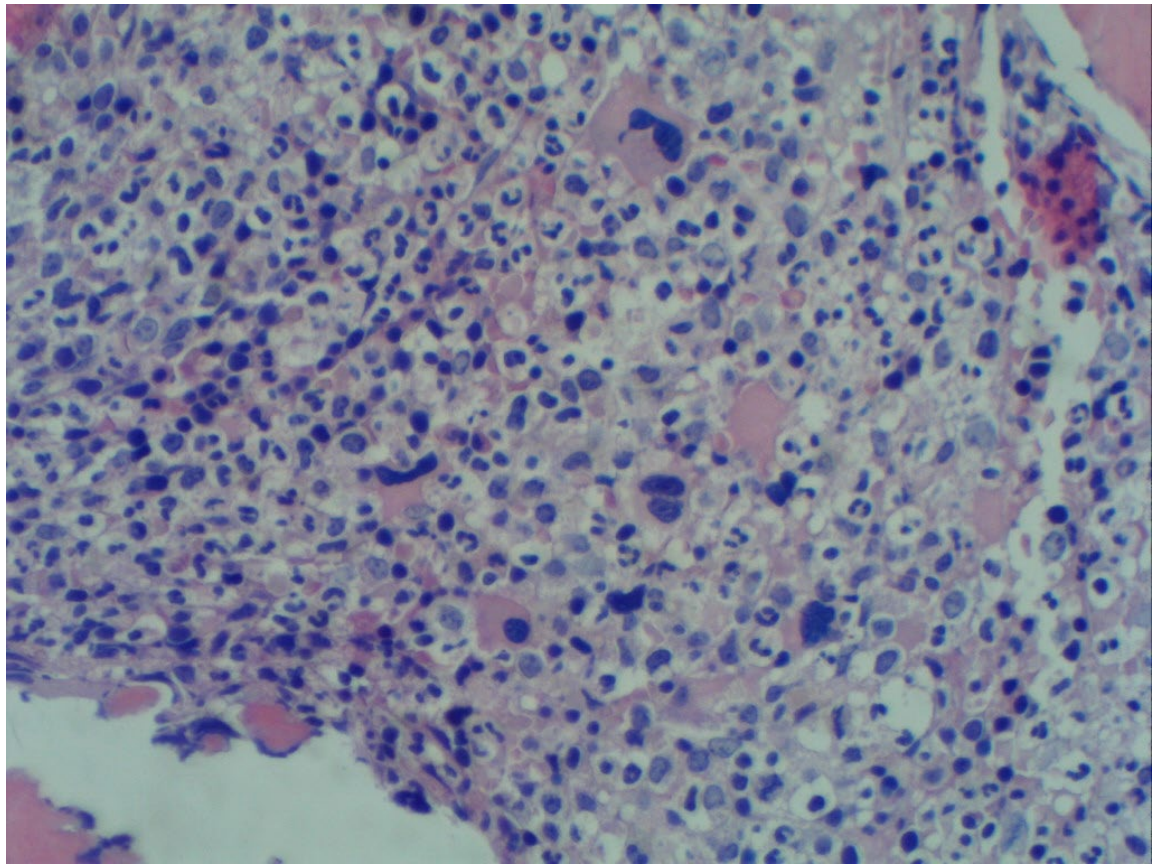


BM pathology: Increased megakaryocytes (not dysplastic)



BM pathology: Dysplastic granulocytic lineage





What Is The Diagnosis?

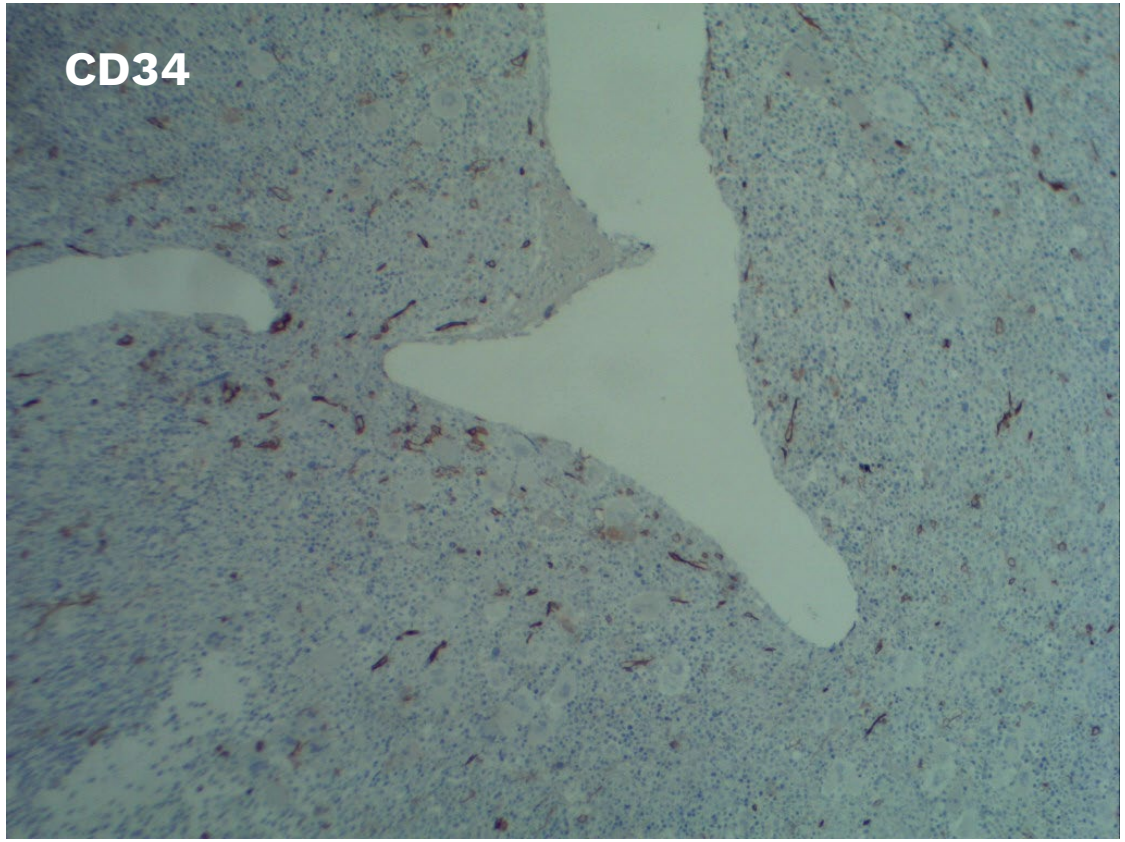
A) Myelodysplastic syndrome (MDS)

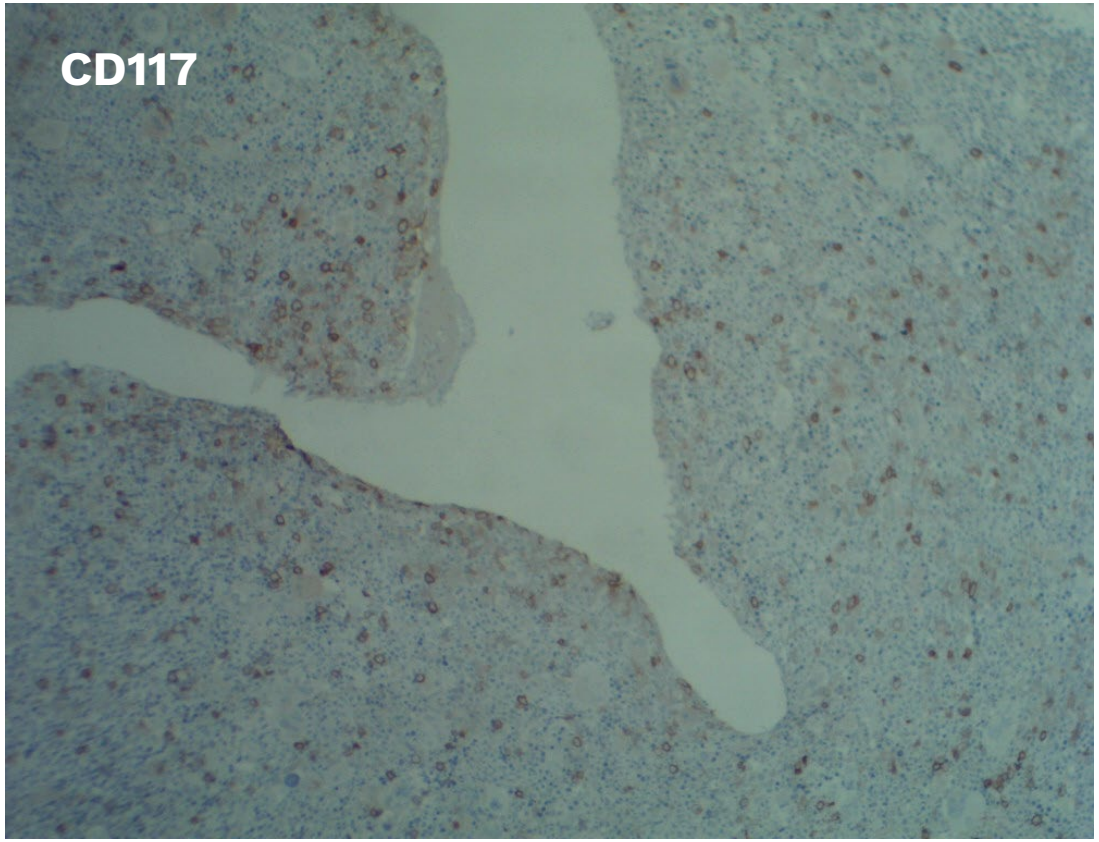
B) Primary myelofibrosis (PMF)

C) Chronic myelomonocytic leukaemia (CMML)

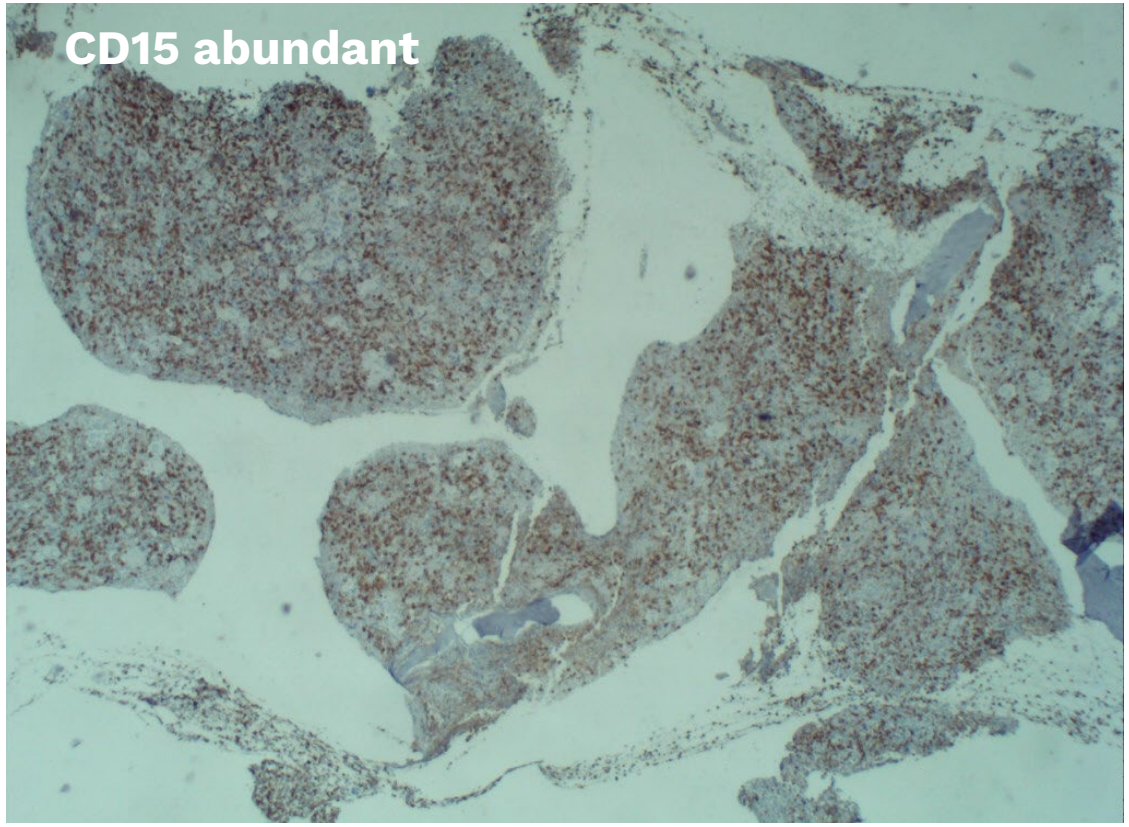
D) Acute myeloid leukaemia (AML)

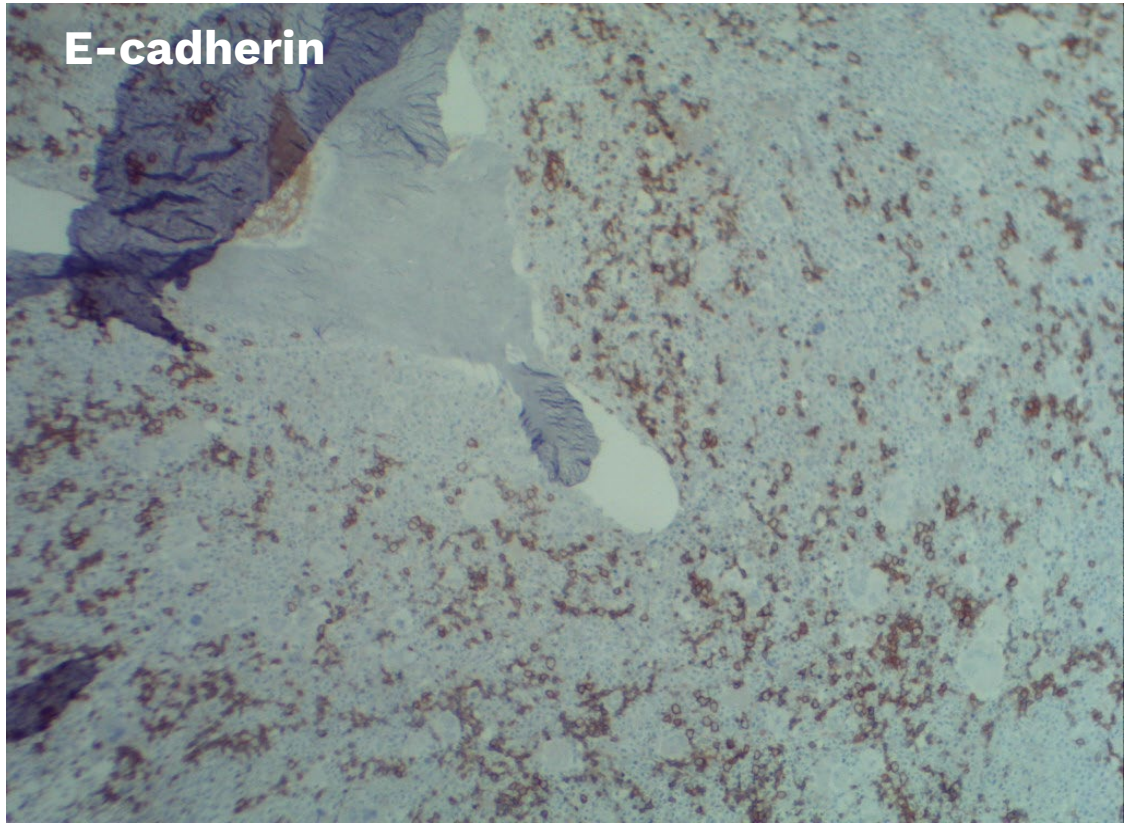
BM Immunohistochemistry (IHC)



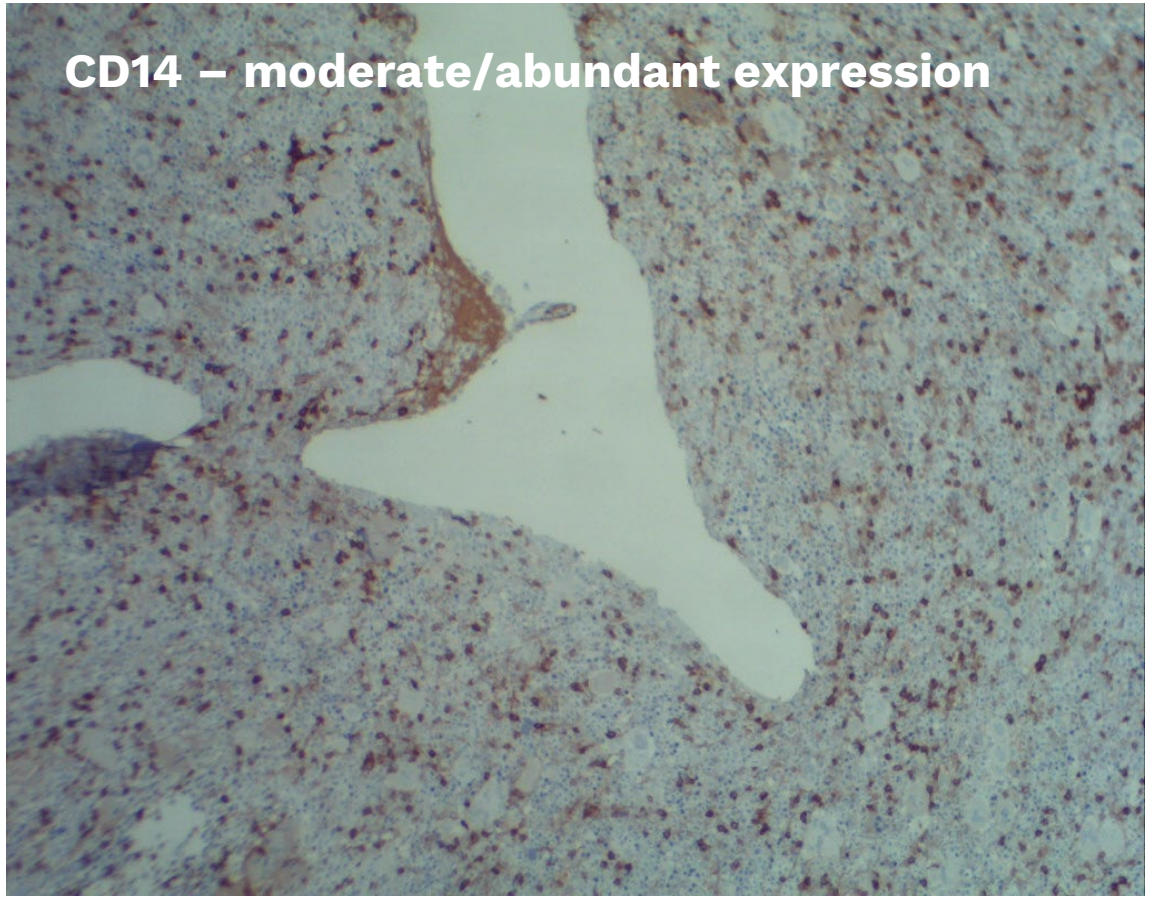


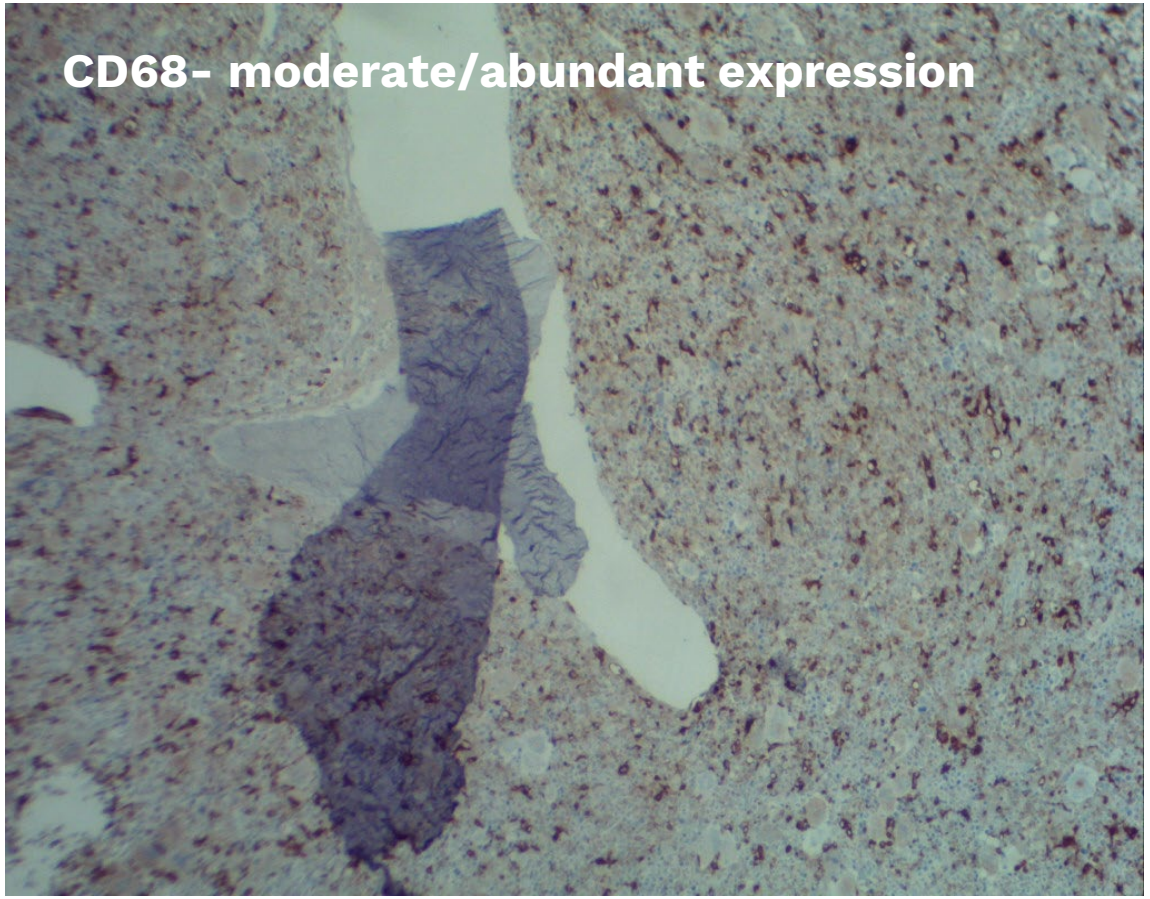
BM IHC



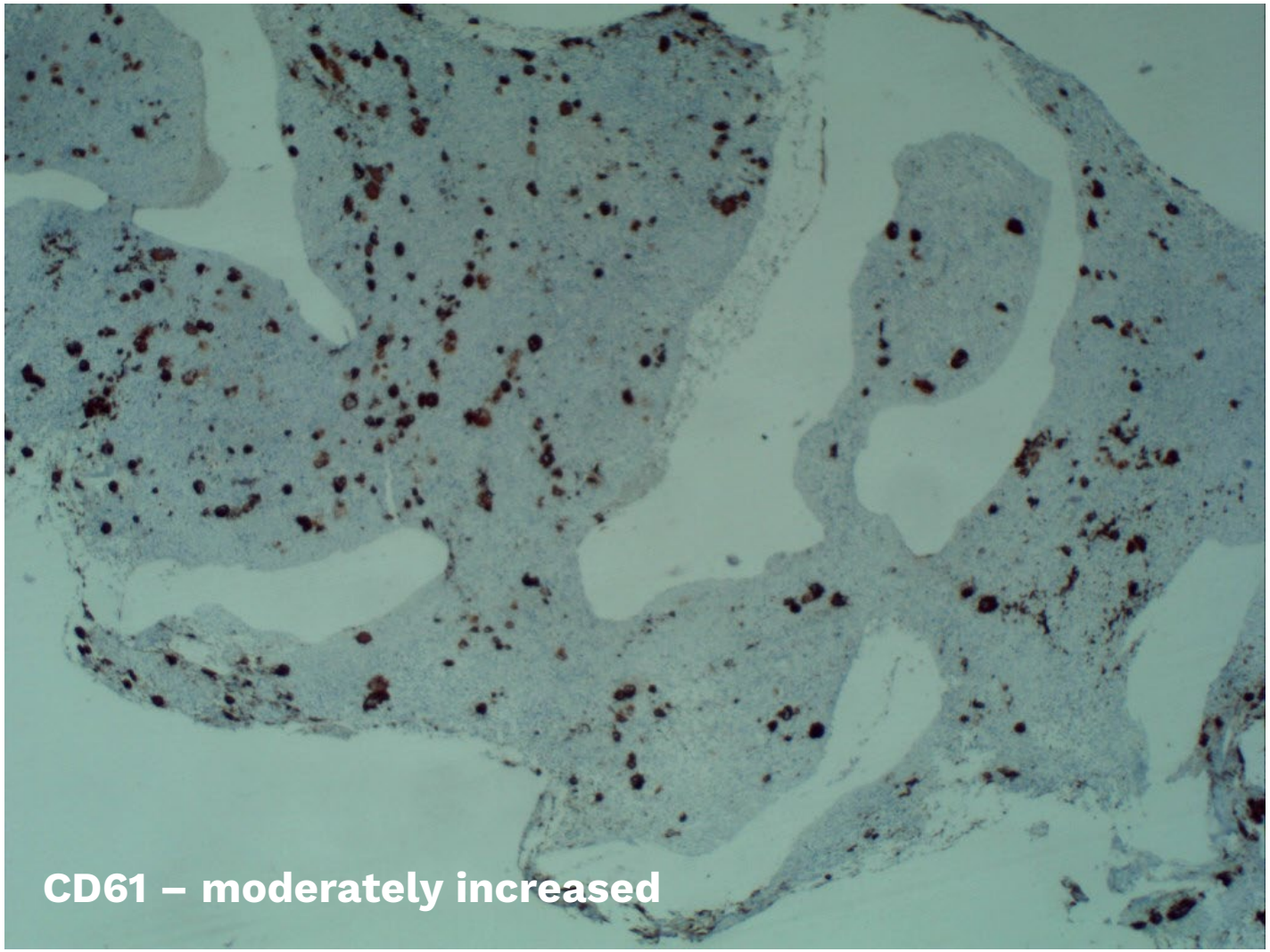


BM IHC


CD14 – moderate/abundant expression

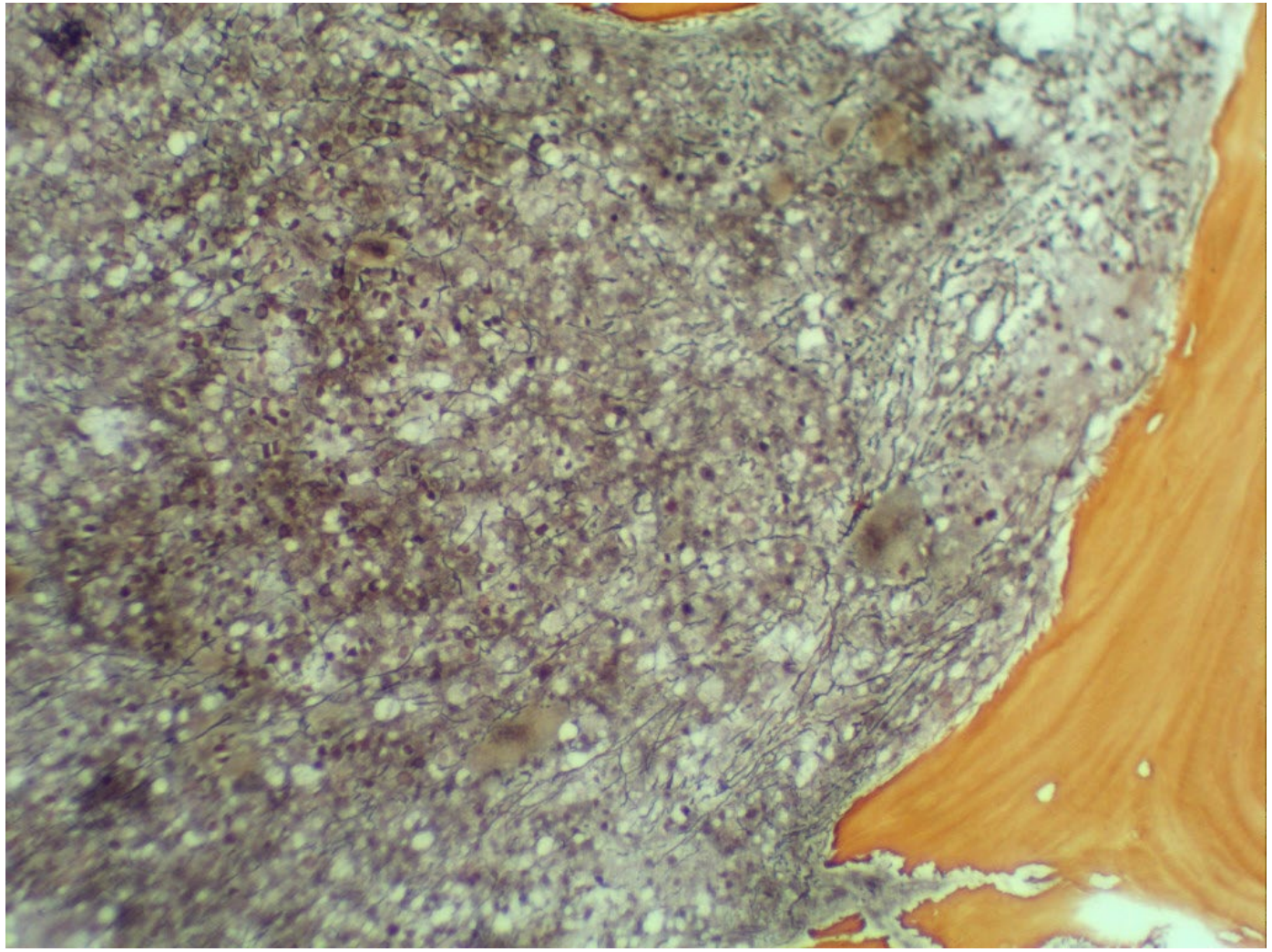

CD68- moderate/abundant expression

BM IHC



BM IHC

Silver stain MF1 fibrosis



Additional Assay Findings

Erythropoietin 7.7 mIU/ml

Vitamin B_{12} – 1698 pg/ml

Folic acid – 6.11 ng/ml

Ferritin – 372 ng/ml

JAK2 V617F – positive

Spleen ultrasound – 17.0 × 6.5cm

Diagnostic criteria of CMML (WHO 2022)

Prerequisite criteria:

1. Persistent absolute (≥0,5x10^9/L) and relative (≥ 10%) peripheral blood monocytosis
2. Blasts constitute <20% of the cells in the peripheral blood and bone marrow
3. Not meeting diagnostic criteria of chronic myeloid leukemia or other myeloproliferative neoplasms
4. Not meeting diagnostic criteria of myeloid/lymphoid neoplasms with eosinophilia and defining gene rearrangements (e.g. *PDGFRA*, *PDGFRB*, *FGFR1* or *JAK2*)

Supporting criteria:

1. Dysplasia involving ≥ 1 myeloid lineages
2. Acquired clonal cytogenetic or molecular abnormality
3. Abnormal partitioning of peripheral blood monocyte subsets

Requirements for diagnosis:

- Pre-requisite criteria must be present in all cases
- Monocytosis ≥ 1 × 10^9/L: one or more supporting criteria must be met
- Monocytosis < 1 × 10^9/L: supporting criteria 1 and 2 must be met

Subtyping criteria:

- MD-CMML: WBC count < 13x10^9/L
- MP-CMML: WBC count ≥ 13x10^9/L

Subgrouping criteria (based on percentage of blasts and promonocytes):

- CMML-1: <5% in peripheral blood and <10% in bone marrow
- CMML-2: 6-19% in peripheral blood and 10-19% in bone marrow

https://www.mll.com/en/myelodysplastic-myeloproliferative-neoplasm-mds-mpn/chronic-myelomonocytic-leukemia-cmml

So, what's the Diagnosis?

Pathologist insists that the BM pathology is identical to that of CMML

BUT…. Absolute monocyte count in peripheral blood

0.7 x 10^9/l (Monocytes + monocytoid immature cells absolute count is 10^9/l

Is there any contradiction with CMML definition by WHO 2022?

Discussion points

- What is the diagnosis?
- Treatment or observation?