

La DIAGNOSTICA EMATOPATOLOGICA nell'ERA della MEDICINA di PRECISIONE

Too sweet to be real



Federico Brunetti

Humanitas University

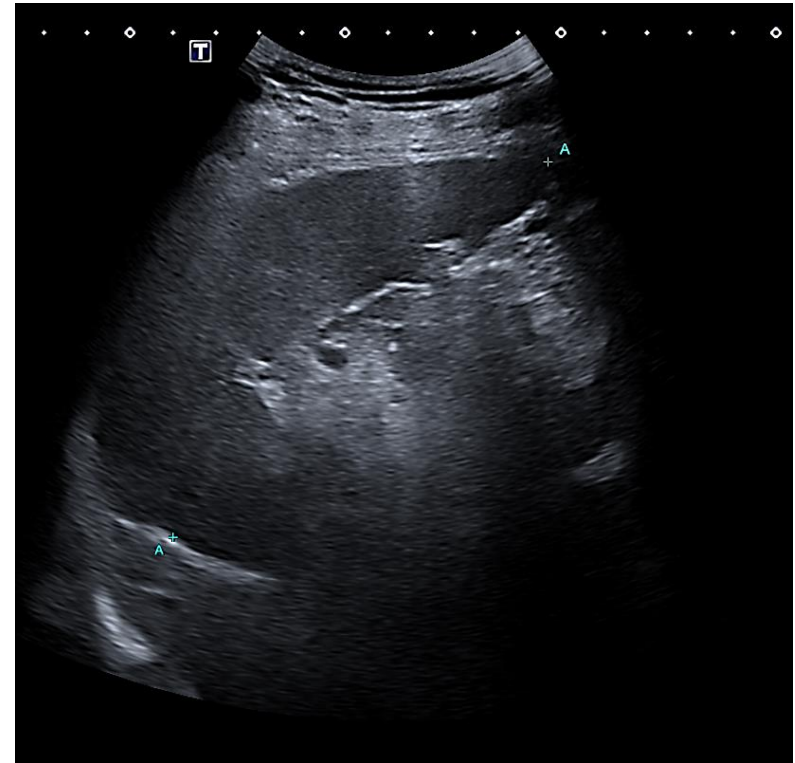
Male, 72 y.o., asymptomatic

- **Hb 16,6 g/dl;**
- **Hct 50%;**
- WBC $5,1 \times 10^9/L$;
- PLT $216 \times 10^9/L$;

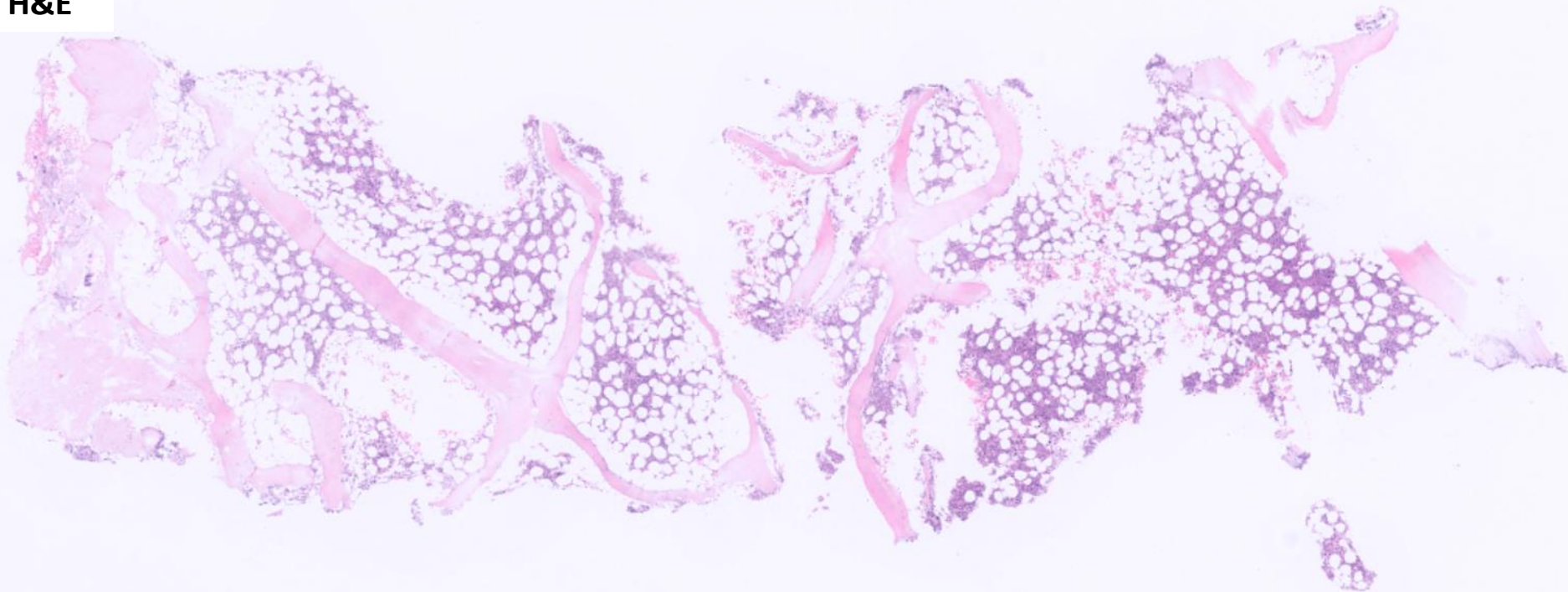
- LDH 234
- EPO 8,23 IU/L.

- **JAK2 V617F: 6%.**

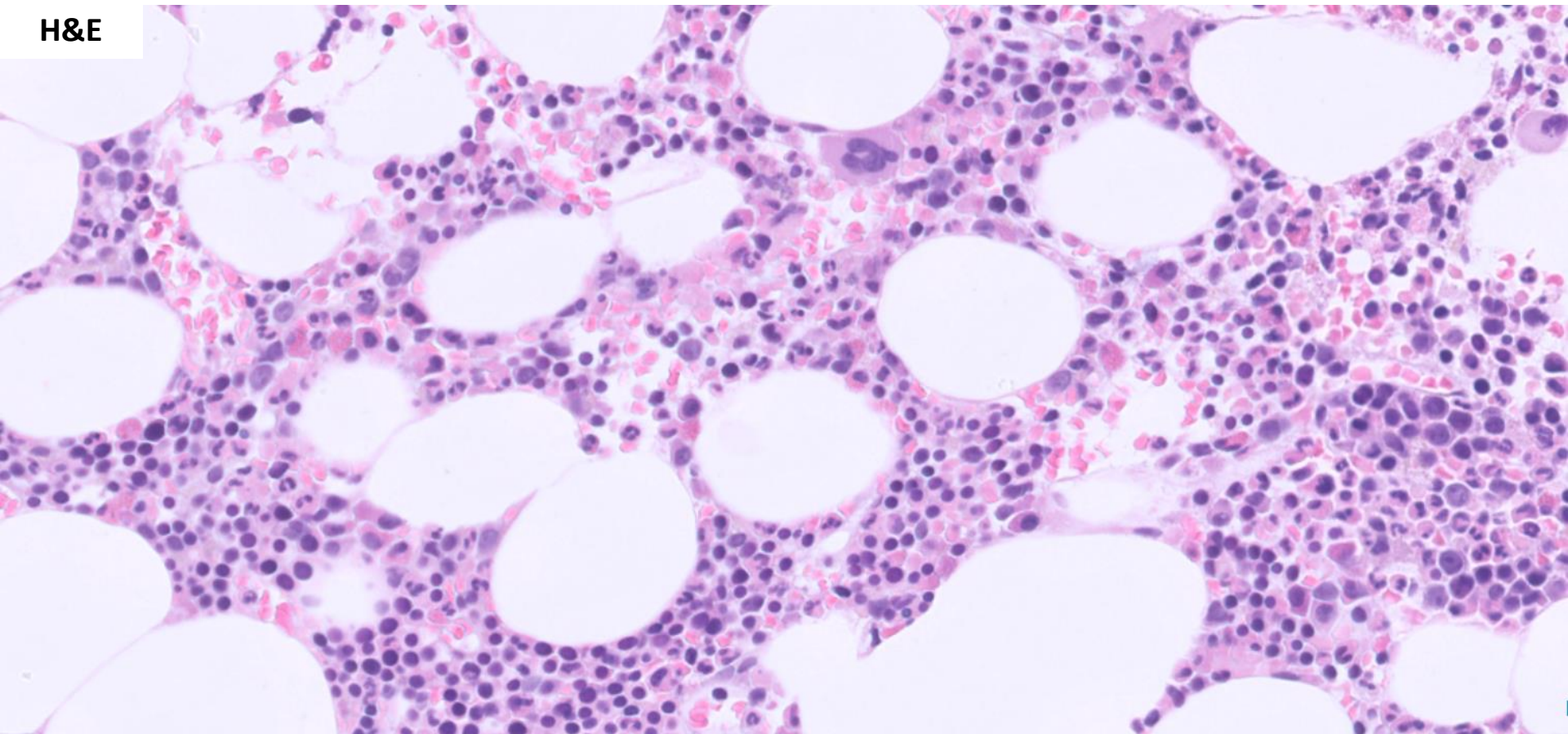
- Abdominal US: Spleen of 12 cm.

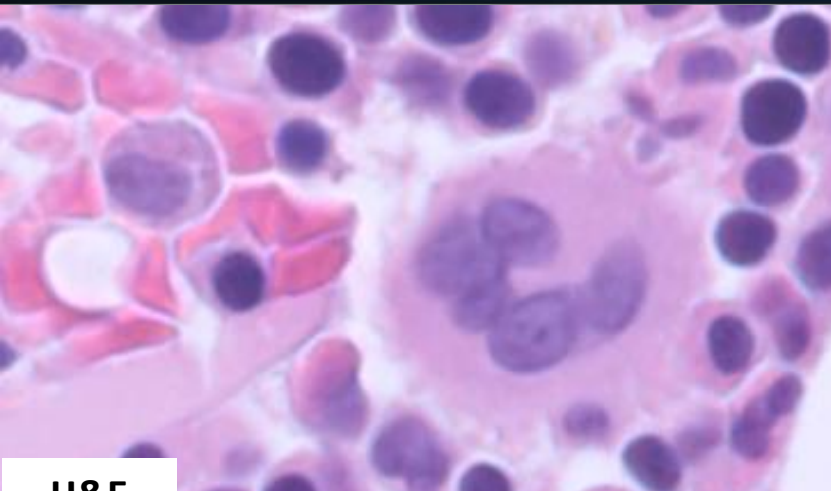


H&E

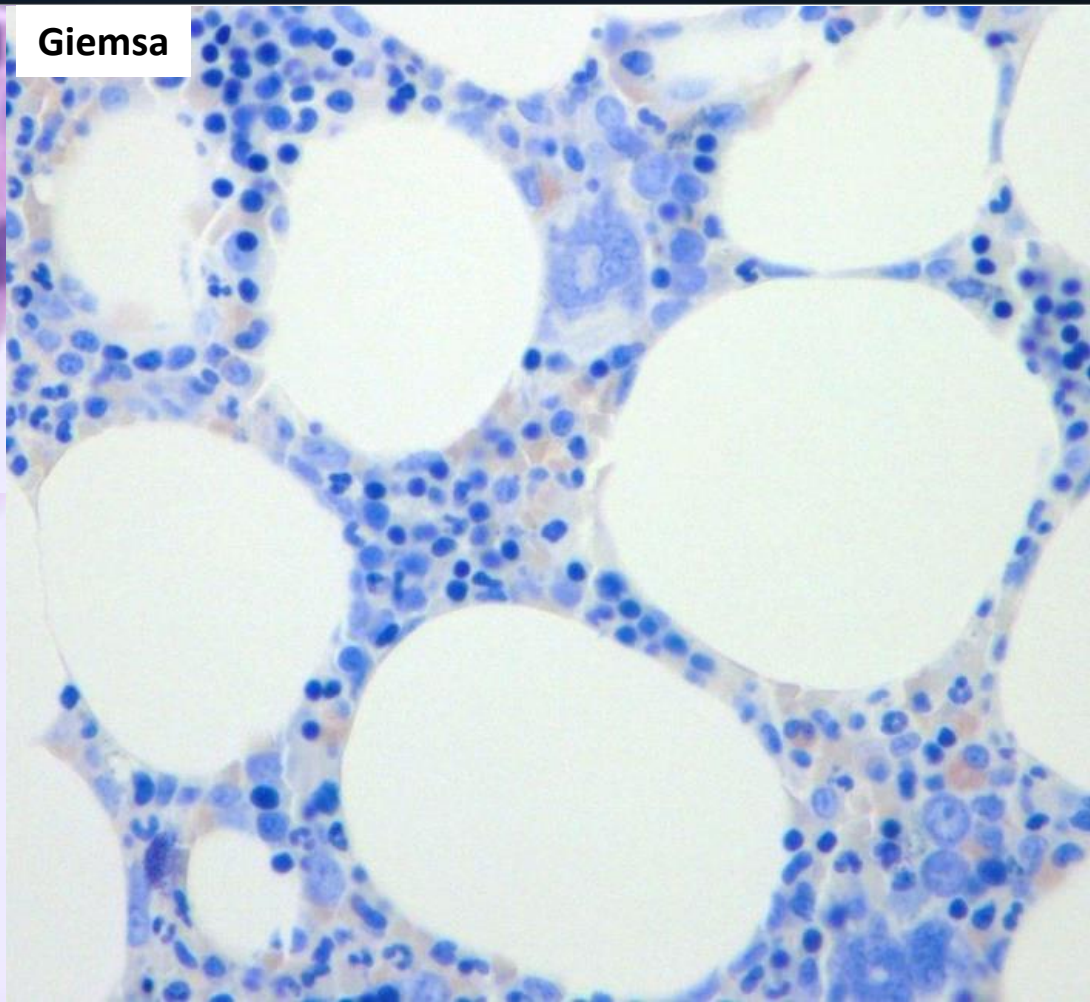


H&E



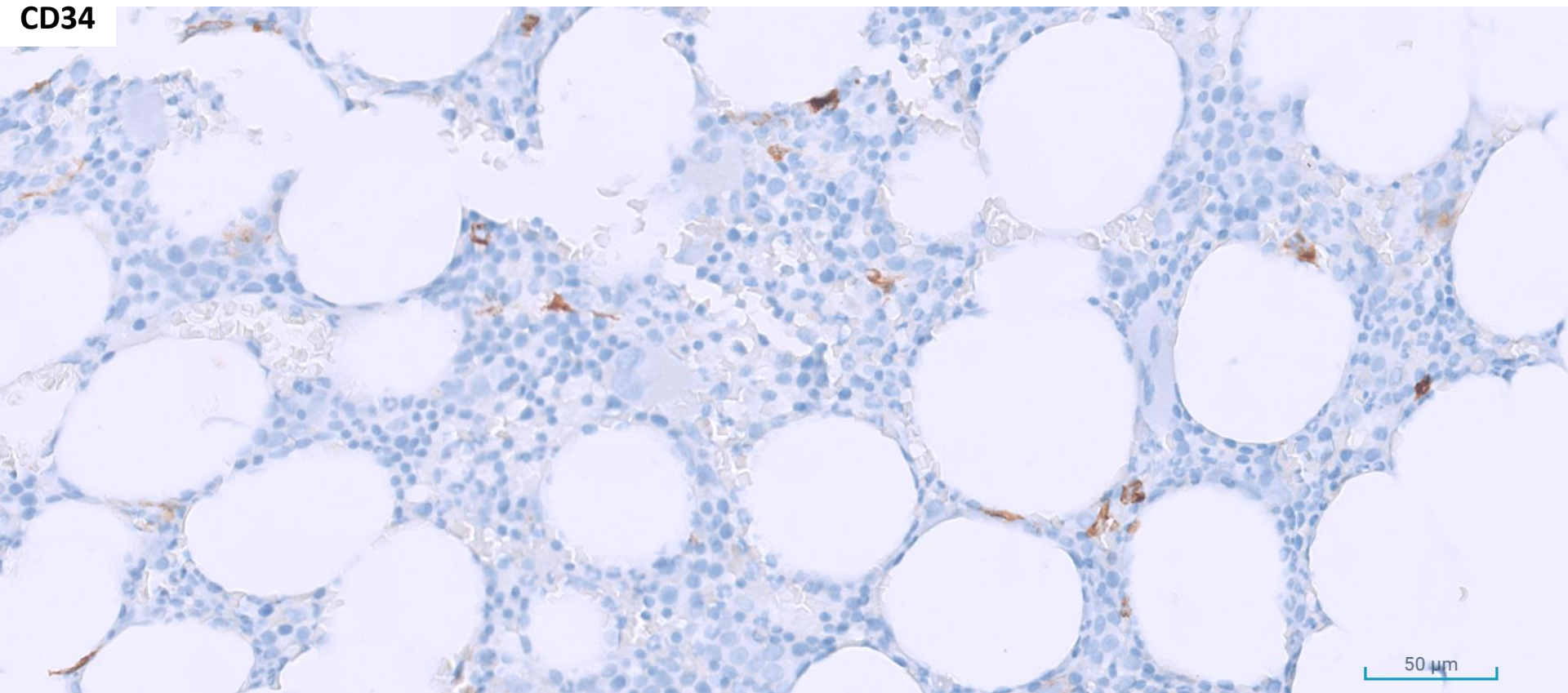


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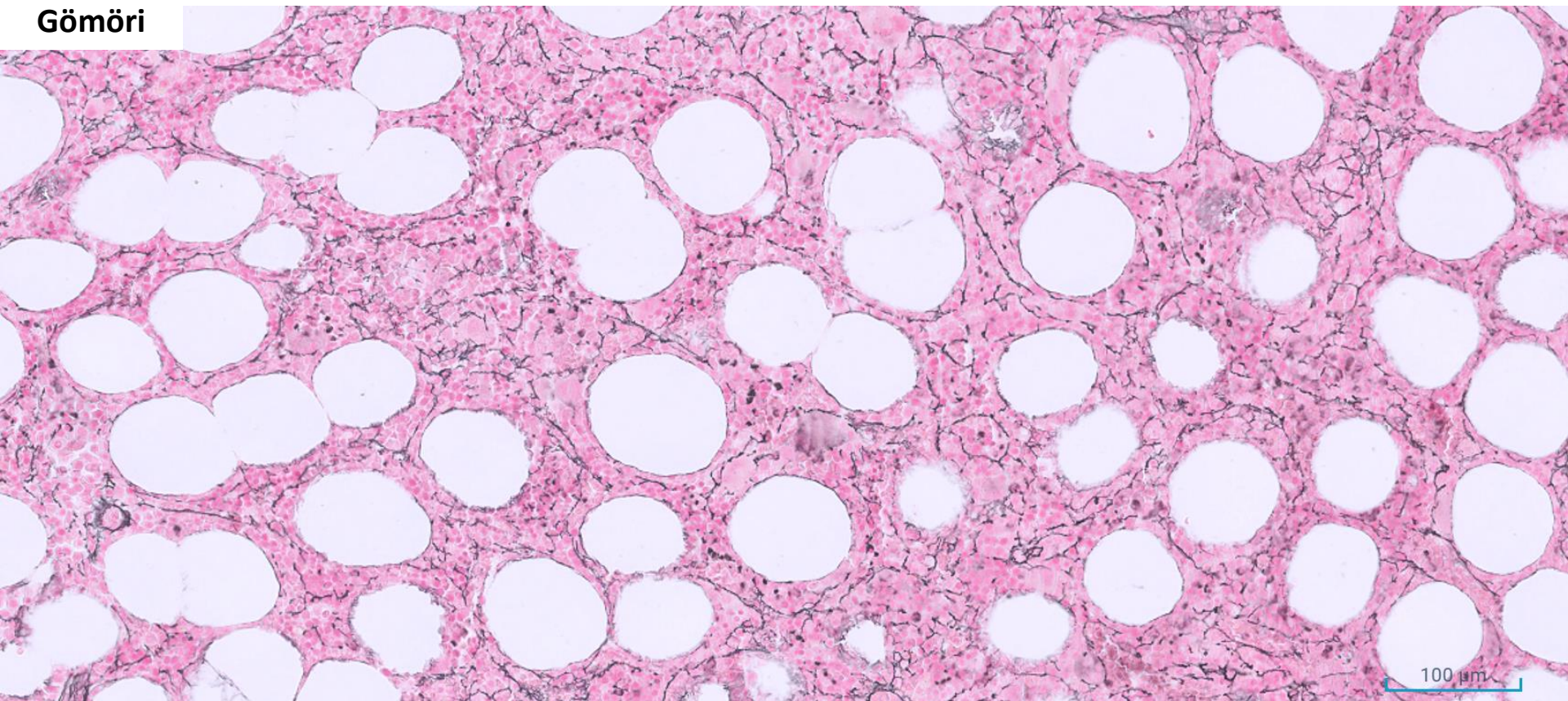


Giemsa

CD34



Gömöri



PV acc. WHO/ICC	Our patient		MPN-U acc. WHO/ICC
Major criteria			
1) Laboratoristic: Elevated hemoglobin concentration (>16.5 g/dL in men) or elevated hematocrit (>49% in men) or increased red blood cell mass (>25% above mean normal predicted value)	Yes	No	1) Clinical and hematological: features of a myeloproliferative neoplasm are present.
2) Molecular: Presence of JAK2 V617F or JAK2 exon 12 mutation	Yes	Yes	2) Molecular: JAK2, CALR, or MPL mutation or presence of another clonal marker
3) Morphological: Bone marrow biopsy showing age-adjusted hypercellularity with trilineage proliferation (panmyelosis), including prominent erythroid, granulocytic, and increase in pleomorphic, mature megakaryocytes without atypia	No	Yes	3. Diagnostic criteria for any other myeloproliferative neoplasm, myelodysplastic syndrome, myelodysplastic/myeloproliferative neoplasm, or BCR::ABL1-positive chronic myeloid leukemia are not met
Minor criteria			
4) Laboratoristic: Subnormal serum erythropoietin level	No	-	-
Diagnosis requires all 3 major criteria or the first two major criteria and the minor criterion.	No	No	The diagnosis of MPN-U requires all 3 criteria

Clinical history

- Hypertension
- **Type 2 diabetes**
- Glaucoma
- Atrial fibrillation
- Stage C heart failure caused by valvular heart disease

Empaglifozine (SGLT2i)

Circulation

RESEARCH LETTER

Effect of Empagliflozin on Erythropoietin Levels, Iron Stores, and Red Blood Cell Morphology in Patients With Type 2 Diabetes Mellitus and Coronary Artery Disease

Circulation

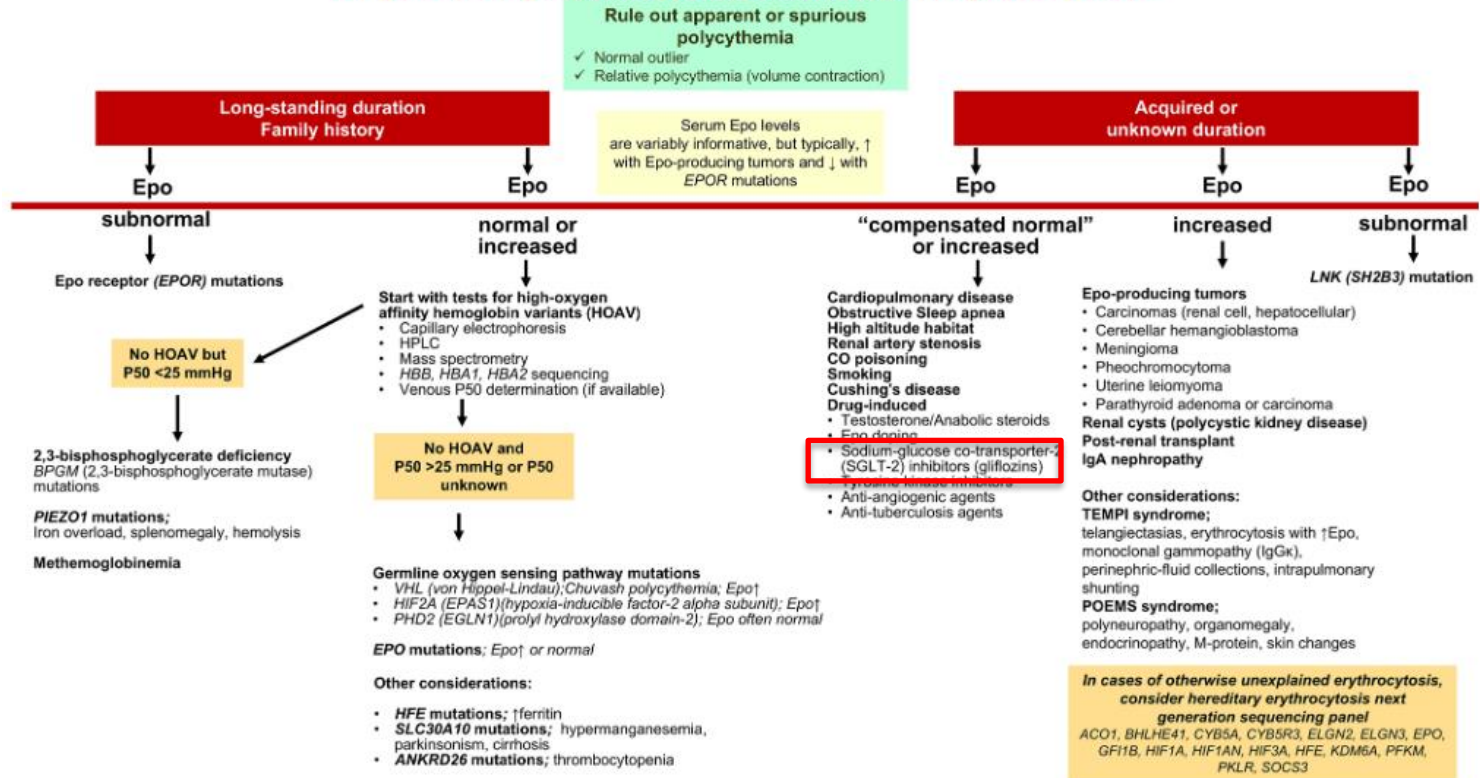
PERSPECTIVE

Possible Mechanism of Hematocrit Elevation by Sodium Glucose Cotransporter 2 Inhibitors and Associated Beneficial Renal and Cardiovascular Effects

Dapagliflozin Suppresses Hepcidin And Increases Erythropoiesis

Husam Ghanim, Sanaa Abuaysheh, Jeanne Hejna, Kelly Green, Manav Batra, Antione Makdissi, Ajay Chaudhuri, and Paresh Dandona

Diagnostic algorithm for **JAK2 unmutated erythrocytosis**



N. Gangat et al. (2025), «JAK2 Unmutated Erythrocytosis: 2026 Update on Diagnosis and Management.» , American Journal of Hematology

Diagnosis

CHIP (JAK2) associated with drug-induced
polyglobulia

- Use of SGLT2i induce erythrocytosis
- In 12% of patients a thrombotic event is observed (significantly associated to phlebotomy)
- In previously diagnosed MPNs may increase the thrombotic risk in PV patients, while may help to treat anemia in PMF

> [Am J Hematol](#). 2023 Jul;98(7):E165-E167. doi: 10.1002/ajh.26933. Epub 2023 Apr 19.

Sodium-glucose co-transporter-2 inhibitor use and JAK2 unmutated erythrocytosis in 100 consecutive cases

Naseema Gangat¹, Mostafa Abdallah¹, Natasha Szuber², Antoine Saliba¹, Hassan Alkhateeb¹, Aref Al-Kali¹, Kebede H Begna¹, Animesh Pardhanani¹, Ayalew Tefferi¹



Blood 142 (2023) 1815-1816

The 65th ASH Annual Meeting Abstracts

POSTER ABSTRACTS



634.MYELOPROLIFERATIVE SYNDROMES: CLINICAL AND EPIDEMIOLOGICAL

Sodium-Glucose Co-Transporter-2 Inhibitor Use in the Setting of Myeloproliferative Neoplasms: Impact on Hemoglobin/Hematocrit Levels and Thrombosis Risk

Naseema Gangat, MBBS¹, Omer Karrar¹, Maymona Abdelmagid², Moazah Iftikhar¹, Kaaren K. Reichard, MD³, Natasha Szuber, MDMSc⁴, Ayalew Tefferi, MD¹

Take Home Messages

1. Adhere to WHO/ICC diagnostic criteria
2. Drugs effect on BM and PB can mimic myeloproliferative neoplasms
3. Before MPNs diagnosis exclude secondary causes of peripheral cytosis



**Thank you
for your attention**



Dr. Arturo Bonometti
Dr. Daoud Rahal
Prof. Silvia Uccella