Myeloproliferative Neoplasm: A Diagnostic Approach to Bone Marrow Evaluation

Clinical suspicion of myeloproliferative neoplasm

Bone marrow testing begins with
- HPWET / Hematopathology Consultation, MCL Embed
- HPCUT / Hematopathology Consultation, Client Embed
- CHRBM / Chromosome Analysis, Hematologic Disorders, Bone Marrow
- BCRFX / BCR/ABL1 Qualitative Diagnostic Assay with Reflex to BCR/ABL1 p190 Quantitative Assay or BCR/ABL1 p210 Quantitative Assay, Varies
- Complete blood count (CBC)
- Clinical findings
- Bone marrow features
- EPO / Erythropoietin (EPO), Serum

Positive for BCR::ABL1
Consistent with chronic myeloid leukemia in the appropriate clinicopathologic setting

Negative for BCR::ABL1
Bone marrow morphology

Suspicious of myeloproliferative neoplasm (MPN)

Suspicious of polycythemia vera (PV)
Order both of the following:
- PVJAK / Polycythemia Vera, JAK2 V617F with Reflex to JAK2 Exon 12-15, Sequencing for Erythrocytosis
- NGSHM / MayoComplete Myeloid Neoplasms, Comprehensive OncoHeme Next-Generation Sequencing

Suspicious of:
- Essential thrombocythemia (ET)
- Primary myelofibrosis (PMF)
- Post-ET/PV myelofibrosis
- Myeloproliferative neoplasm-unclassified (MPN-U)
Order both of the following:
- MPNR / Myeloproliferative Neoplasm, JAK2 V617F with Reflex to CALR and MPL
- NGSHM

Erythrocytosis present
Order PVJAK

POSITIVE
Consistent with PV in the appropriate clinicopathologic setting

NEGATIVE
Rule-out: ET PMF Post-ET/PV myelofibrosis MPN-U
Order MPNR
Consider NGSHM if clinically indicated

Chronic Myeloid Leukemia Algorithm

ET
PMF
Post-ET/PV myelofibrosis
MPN-U
Order PVJAK
Consider NGSHM if clinically indicated

Erythrocytosis Evaluation, Blood
Consider NHEP / Hereditary Erythrocytosis Gene Panel, Next-Generation Sequencing

Not suspicious of MPN