Mast cells observed

World Health Organization systemic mastocytosis (SM) diagnostic criteria met

If BM aspirate and biopsy also display features of a hematologic neoplasm

Perform:
- CHRB M / Chromosome Analysis, Hematologic Disorder, Bone Marrow
- CHICF / CHIC2 (4q12) Deletion (FIP1L1 and PDGFRA Fusion), FISH, Varies
- EXHR / Chromosome Analysis, DNA and RNA Extract and Hold, Varies

On a case by case basis; if the bone marrow aspirate shows:
- Mast cell burden is >15%
- Mast cell burden is >5%

Perform:
- KITE / KIT Mutation Exons 8-11 and 17, Hematologic Neoplasms, Sequencing, Varies
- NGSHM / OncoHeme Next-Generation Sequencing for Myeloid Neoplasms, Varies

STOP
No additional testing required

If KIT Asp816Val is negative

Consider monoclonal mast cell activation syndrome (MMAS) if CD25 or KIT Asp816 Val positive

Consider possible sampling issue. Resample and retest if clinically appropriate

If bone marrow (BM) biopsy and IHC stains are inadequate, order:
LCMS / Leukemia/Lymphoma Immunophenotyping, Flow Cytometry, Varies

Evaluate BM aspirate smear and biopsy for possible non-mast cell hematologic neoplasms

Normal BM morphology and tryptase Negative KIT mutation

Perform:
- CHRBM / Chromosome Analysis, Hematologic Disorder, Bone Marrow
- CHICF / CHIC2 (4q12) Deletion (FIP1L1 and PDGFRA Fusion), FISH, Varies
- EXHR / Chromosome Analysis, DNA and RNA Extract and Hold, Varies

OncoHeme Next-Generation Sequencing for Myeloid Neoplasms, Varies

Diagnostic for systemic mastocytosis with an associated hematological neoplasm

If KIT Asp816Val is negative

Normal BM morphology and tryptase Negative KIT mutation

Evaluate BM aspirate smear and biopsy for possible non-mast cell hematologic neoplasms

Other hematologic cells observed

Mast cells observed

≤2 minor SM diagnostic criteria met

If bone marrow (BM) biopsy and IHC stains are inadequate, order:
LCMS / Leukemia/Lymphoma Immunophenotyping, Flow Cytometry, Varies

Note reason for referral as Mast cells

No additional testing required

If BM aspirate and biopsy also display features of a hematologic neoplasm

If SM disease-specific workup

Perform disease specific workup of the associated hematologic malignancy

Evaluate BM aspirate smear and biopsy for possible non-mast cell hematologic neoplasms

World Health Organization Criteria for Systemic Mastocytosis (SM)
Diagnosis of SM can be established if at least 1 major AND 1 minor OR 3 minor criteria are met
- Major criteria
  Multifocal dense infiltrates of mast cells (MC) in bone marrow (BM) biopsies or in section of other extracutaneous organs
- Minor criteria
  1. More than 25% of all MCs are atypical (type I or II) or spindle-shaped
  2. KIT Asp816Val point mutation present
  3. MCs exhibit CD2 or CD25
  4. Baseline serum tryptase is >20 ng/mL, unless there is an associated myeloid neoplasm, in which case this parameter is not valid.