SM-AHN Leaflet: Identifying Systemic Mastocytosis (SM) in Haematological Neoplasms

~20% of SM cases may be initially missed in patients with myeloid neoplasms[1]*

*Based on 140 patients with Advanced SM from a German reference centre of the ECNM between 2003 and 2018.[1]

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Diagnosis of systemic mastocytosis (SM) requires 1 major and ≥1 minor criterion, or ≥3 minor criteria[2]

WHO DIAGNOSTIC CRITERIA FOR SM[2]

Major Criterion

Multifocal dense infiltrates of mast cells (≥15 mast cells in aggregates) in bone marrow biopsies and/or in sections of other extracutaneous organ(s)

Minor Criteria

≥25% of all mast cells are atypical cells (type I or type II) on bone marrow smears or are spindle-shaped in mast cell infiltrates in sections of bone marrow or other extracutaneous organs

KIT-activating *KIT* point mutation(s) at codon 816 or in other critical regions of *KIT* in bone marrow or another extracutaneous organ

Mast cells in bone marrow, blood or another extracutaneous organ express one or more of: CD2 and/or CD25 and/or CD30

Baseline serum tryptase concentration >20 ng/mL. In the case of a known HαT, the tryptase level should be adjusted

Performing a high-sensitivity *KIT* D816V assay is recommended for patients in whom SM is suspected[3]

HαT=hereditary alpha-tryptasemia; WHO=World Health Organization.

Advanced SM predominantly presents with haematological neoplasms of myeloid origin[4,5]

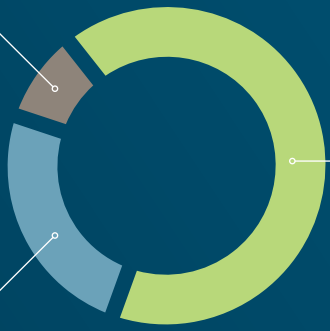
CLASSIFICATION OF ADVANCED SM

Mast cell leukaemia (MCL)

≥20% mast cells on aspirate/peripheral blood[2]

Aggressive systemic mastocytosis (ASM)

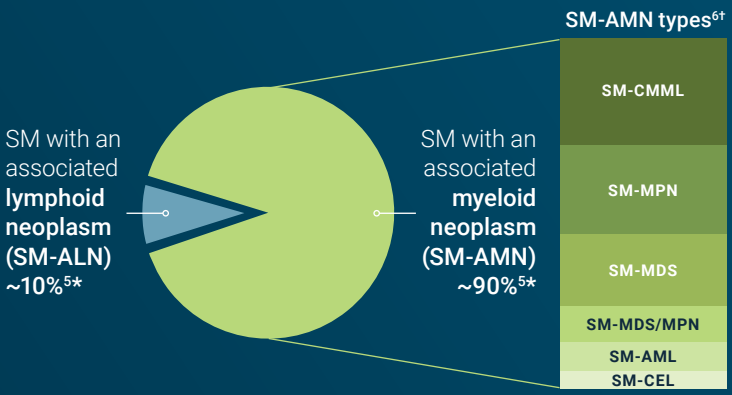
≥1 WHO SM C-finding[2]



Systemic mastocytosis with an associated haematological neoplasm (SM-AHN)

Meets WHO criteria for SM and has a non-mast cell haematologic neoplasm[2]

Data based on ECNM patient cohort. Only patients with Advanced SM are shown here (N=354).[4]



*Data based on a retrospective study at the Mayo Clinic. Only patients with SM-AHN are reported (N=138).[5]
†Estimated prevalence among all reported cases of SM-AHN, based on data that have been published in the available literature (PubMed) reported in the Valent 2024 study.[6]

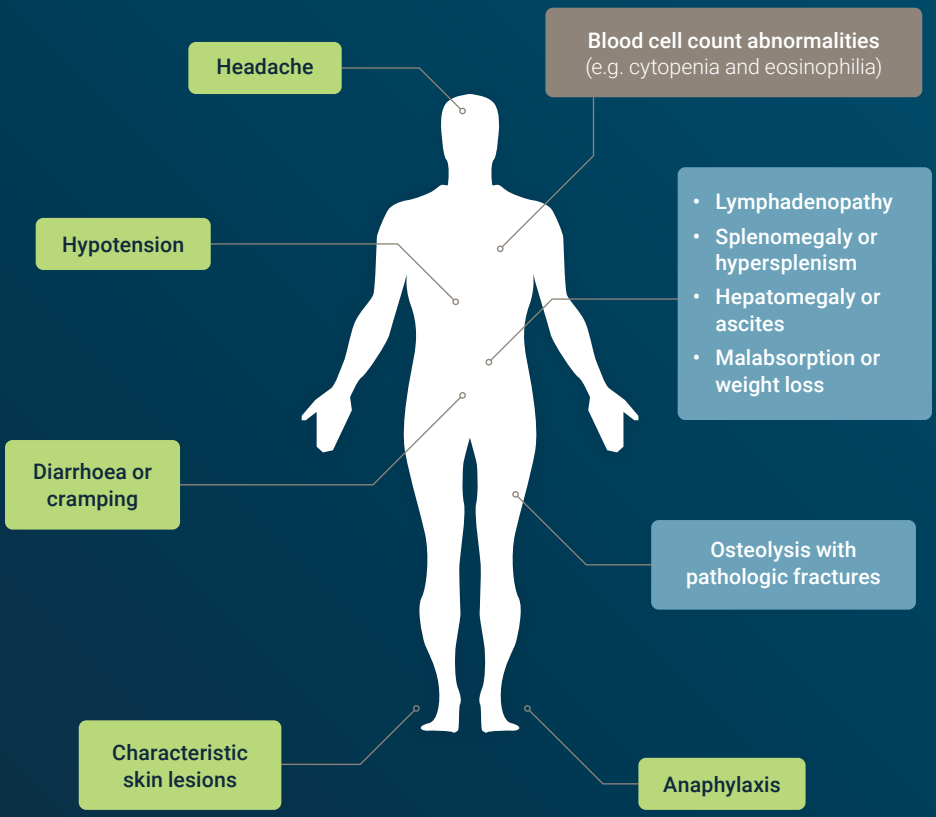
3.4% of CMML cases present with concurrent SM;[7‡]
CMML is the most common myeloid neoplasm associated with SM[6]

‡Data based on 645 CMML patients from the Moffitt Cancer Center CMML database.[7]

AML=acute myeloid leukaemia; ASM=aggressive systemic mastocytosis; CEL=chronic eosinophilic leukaemia; CMML=chronic myelomonocytic leukaemia; ECNM=European Competence Network of Mastocytosis; MCL=mast cell leukaemia; MDS=myelodysplastic syndrome; MDS/MPN=myelodysplastic syndrome/myeloproliferative neoplasm; MPN=myeloproliferative neoplasm; SM-AHN=systemic mastocytosis with an associated haematological neoplasm; SM-ALN=SM with an associated lymphoid neoplasm; SM-AMN=SM with an associated myeloid neoplasm; WHO=World Health Organization.

Could your patients with haematological neoplasms be experiencing undiagnosed SM?

The presence of persistent non-chemotherapy-specific constitutional symptoms or unexplained organopathy due to mast cell infiltration in AHNs should prompt suspicion and further investigation for SM:[3,8]

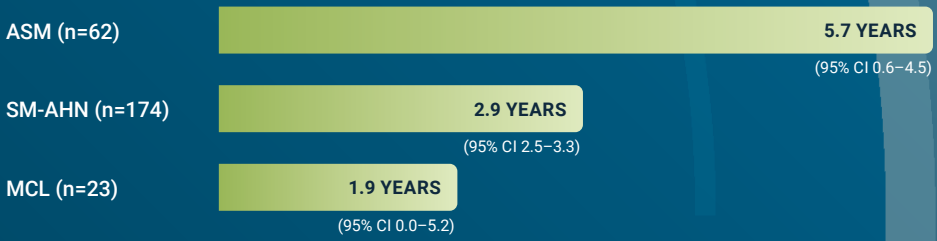


Diagnosis of SM in patients with another haematological neoplasm is defined as SM-AHN, a subtype of Advanced SM.[2] Advanced SM is a rare clonal mast cell neoplasm and can cause debilitating mast cell symptoms as well as organ damage[8]

SM-AHN=systemic mastocytosis with an associated haematological neoplasm.

Advanced SM is associated with shortened survival compared with non-advanced SM[9]

MEDIAN OVERALL SURVIVAL (OS) FOR ADVANCED SM[9]



Data based on the ECNM registry of patients diagnosed with mastocytosis between 1978 and 2017. Only patients with Advanced SM are shown here (N=259).[9]

UNDERSTANDING THE IMPACT OF SM CO-OCCURRENCE

In a study comparing the clinical outcomes of patients with SM-CMML and CMML alone (N=551):[10]

MEDIAN SURVIVAL FOR SM-CMML

18 MONTHS

n=50

Median follow-up of 16 months

MEDIAN SURVIVAL FOR CMML ALONE

24 MONTHS

n=501

Median follow-up of 14 months

SM-CMML has a poorer survival rate than CMML alone[10]

ASM=aggressive systemic mastocytosis; CMML=chronic myelomonocytic leukaemia; ECNM=European Competence Network of Mastocytosis; MCL=mast cell leukaemia; SM-AHN=systemic mastocytosis with an associated haematological neoplasm.

Advanced SM may be missed in patients with myeloid neoplasms[1]

If you recognise persistent or unexplained haematological findings, consider performing a serum tryptase test and high-sensitivity *KIT* D816V assays to help screen for concurrent SM in myeloid neoplasms[1,3]

References:

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8. Pardanani A. *Am J Hematol.* 2023;98(7):1097–1116.
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10. Patnaik MM, *et al. Leukemia.* 2018;32(8):1850–1856.

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