

Isolated *KRAS* and *NRAS* mutations in adults with monocytosis and/or cytopenia(s)

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Supplemental material

NGS was performed at the respective institutions, with panels comprising 68 to 648 genes. A total of 38 genes were shared across all panels, as shown below.

ASXL1, BCOR, BCORL1, BRAF, CALR, CBL, CEBPA, CSF3R, DNMT3A, ETV6, EZH2, FLT3, GATA1, GATA2, IDH1, IDH2, JAK2, KIT, KRAS, MPL, NF1, NPM1, NRAS, PHF6, PTPN11, RAD21, RUNX1, SETBP1, SF3B1, SH2B3, SRSF2, STAG2, STAT3, TET2, TP53, U2AF1, WT1, and ZRSR2

Supplemental Table 1: Comparison of patients diagnosed with a myeloid neoplasm and patients with a diagnosis of precursor lesions

	Myeloid Neoplasm (n=26)	Precursor entities (CCUS, CMUS, CCMUS) (n=26)	p
Age (median, range)	67 (25-92)	60(29-82)	0.007
Gender (Male:Female)	8:18	13:13	0.258
White blood cell count x10 ⁹ /L (median, range)	5.25(2.2-38.8)	4.35(1.1-21.40)	0.323
Absolute monocyte count x10 ⁹ /L (median, range)	1.55(0.21-6.98)	1.28(0.15-3.98)	0.106
• AMC<0.5 and or <10%	• 2	• 6	
• AMC 0.5-1.0 and >10%	• 5	• 5	
• AMC≥1.0	• 19	• 15	
Hemoglobin g/dL, (median, range)	11.3(7.0-15.9)	12.3(7.7-16.6)	0.131
Platelets x10 ⁹ /L (median, range)	151 (23-564)	120(26-652)	0.979
Organomegaly	18/26	15/25	0.565
Immune-related disorders	9/26	11/26	0.776
Bone marrow cellularity (5%)	80(50-100)	80(5-100)	0.113
Bone marrow monocytes (5%)	5.0(1-21)	5.5(0-16)	0.735
Bone Marrow blasts/promonocytes	2.0 (0-16)	1.5(0-5.0)	0.109
Dysplasia	Multiplaneage dysplasia in 15, unilineage in 8, and no significant dysplasia in 3	Borderline/mild in one lineage in 3 cases	
Bone Marrow fibrosis MF1 and MF2	12/24 MF1, 1/24, MF2	6/12 MF1, and 1/12 MF2	
RAS VAF (%) (median, range)	41.4(4.7-48.9)	35.8(2.6-53)	0.376

Supplemental Table 2. NRAS/KRAS Mutation information and Corresponding Diagnoses

		KRAS/NRAS	Mutation codons	VAF (%)
1	CCMUS. clinical RALD	KRAS	G13D	46.9
2	CMUS	KRAS	G12R	29.5
3	CMUS, clinical RALD	KRAS	G13C	36.5
4	CCUS	KRAS	G13C	15.3
5	CCMUS	KRAS	G12V	37.9
6	CMUS	NRAS	G60E	14.1
7	CCMUS	KRAS	A146P	46.6
8	CCMUS	KRAS	G12S	43.9
9	CMML-1 MP	NRAS	G12D	48.9
10	CMML-1 MD	KRAS	G12D	42.2
11	CCMUS	KRAS	G12D	2.6
12	CCMUS (0.5-1 x10 ⁹ /L)	KRAS	A146T	17.7
13	CCMUS	KRAS	G12D	7.8
14	CCUS	KRAS	G13C	53.0
15	CMML-1 MD	KRAS	G12A	4.7
16	CMML-1 MD- oligomonocytic	NRAS	G12D	43.7
17	CMML-1 MD	KRAS	G13C	8.4
18	CMUS	NRAS	G12D	29.6
19	CMML-1 MP	KRAS	G12R	20.3
20	CMML-1 MD	KRAS	G12R	4.8
21	CMML-1 MD- oligomonocytic	KRAS	G12D	26.0
22	CMML-1 MD	KRAS	G13D	47.0
23	CMML-1 MD	KRAS	G12D	35.7
24	CMML- oligomonocytic	KRAS	A146T	22.3
25	CHIP	KRAS	G13D	4.1
26	CCMUS (0.5-1 x10 ⁹ /L)	KRAS	G12D	16.7
27	CMML-2 MD	KRAS	G13D	45.2
28	MDS	KRAS	A146V	17.2
29	CMML-1 MD	KRAS	G13D	46.6
30	CMML-1 MD	KRAS	G12D	40.8
31	CMML- oligomonocytic	KRAS	G13C	45.2
32	MDS/MPN-NOS	KRAS	G12R	44.0

33	CMML-1 MD	KRAS	G12D	33.1
34	CMML-1 MD	KRAS	G12D	40
35	CMML-1 MD	KRAS	G12D	45.0
36	CMML-2 MD	KRAS	G12D	47.4
37	CMML-1 MP	KRAS	G12D	23.9
38	CCMUS	KRAS	G12D	40
39	CMML-1 MP	KRAS	G12D	47
40	CCMUS (0.5-1 x10 ⁹ /L)	KRAS	G13D	33
41	CCMUS	KRAS	G12D	47
42	CCMUS (0.5-1 x10 ⁹ /L AMC)	KRAS	G12D	45
43	CCMUS, clinical RALD,	KRAS	Q61K	41
44	CMML-1 MD	KRAS	L19F	42
45	CMML-1 MD	KRAS	G12C	43
46	CCUS, clinical RALD	KRAS	G12D	43
47	CCUS	KRAS	G13D	25
48	CMML-1 oligo	KRAS	G12V	37
49	CCUS	KRAS	G12S	3
50	CCMUS	KRAS	G12D	46
51	CCMUS (0.5-1 x10 ⁹ /L)	KRAS	G13D	35
52	CCMUS, clinical RALD	KRAS	G12D	45

Abbreviation: CMUS: clonal monocytosis of undetermined significance; CCMUS: clonal cytopenia and monocytosis of undetermined significance; CCUS: clonal cytopenia of uncertain significance; MDS/MPN: myelodysplastic/myeloproliferative neoplasms; RALD: RAS-associated autoimmune leukoproliferative disorder; CHIP: clonal hematopoiesis of indeterminate potential; CMML: chronic myelomonocytic leukemia; MD: myelodysplastic subtype, MP: myeloproliferative subtype.