Check for updates

ELSEVIER

Blood 142 (2023) 4213–4215

The 65th ASH Annual Meeting Abstracts

POSTER ABSTRACTS

613.ACUTE MYELOID LEUKEMIAS: CLINICAL AND EPIDEMIOLOGICAL

Clinical Characteristics and Outcomes of Myeloid Neoplasms with *Mecom* Rearrangement: Results from a Nationwide Multicenter Study

Chantana Polprasert, MD[1], *Chantiya Chanswangphuwana, MD*[2], *Weerapat Owattanapanich*[3], *Smith Kungwankiattichai, MD*[4], *Ekarat Rattarittamrong, MD*[5], *Thanawat Rattanathammethee, MD*[6], *Wasithep Limvorapitak, MD*[7], *Supawee Saengboon*[8], *Pimjai Niparuck*[9], *Teeraya Puavilai, MD*[10], *Jakrawadee Julamanee, MDPhD*[11], *Pirun Saelue, MD*[12], *Chinadol Wanitpongpun, MD*[13], *Chajchawan Nakhakes, MDMSc*[14], *Kannadit Prayongratana*[15], *Chantrapa Sriswasdi, MD*[16], *Adisak Tantiworawit, MD*[17]

[1] Division of Hematology and Excellence Center in Translational Hematology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand
[2] Division of Hematology and Excellence Center in Translational Hematology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand
[3] Siriraj Hospital, Bangkok, THA
[4] Siriraj Hospital, Mahidol University, Bangkok, BKK, Thailand
[5] Division of Hematology, Department of Internal Medicine, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand
[6] Chiang Mai University, Maung, Chiang Mai, Thailand
[7] Thammasat University, Pathumthani, Thailand
[8] Thammasat University, Pathum Thani, THA
[9] RAMATHIBODI HOSPITAL, Bangkok, THA
[10] Mahidol University and Ramathibodi Hospital, Bangkok, Thailand
[11] Prince of Songkla University, Songkhla, Thailand
[12] Prince of Songkla University, Songkla, THA
[13] Srinagarind Hospital, Thailand, THA
[14] Rajavithi Hospital, Bangkok, THA
[15] Phramongkutklao Hospital and College of Medicine, BKK, Thailand
[16] Phramongkutklao Hospital and College of Medicine, Bangkok, THA
[17] Division of Hematology, Department of Internal Medicine, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand

MECOM rearrangements are detected in myeloid neoplasms [myelodysplastic neoplasm (MDS) and acute myeloid leukemia (AML)] which are associated with dismal prognosis. Classic *MECOM* rearrangements include inv(3)(q21q26.2) and t(3;3)(q21;q26) while non-classic subtypes are 3q26.2/ *MECOM* rearrangement with other partners. Both classic and non-classic rearrangements result in *MECOM* overexpression which involves in the process of leukemogenesis. Recently, the World Health Organization classification 2022 categorized myeloid neoplasms with these genetic abnormalities as "AML with *MECOM* rearrangement" regardless of blast count. We aim to explore frequency, clinical characteristics and outcomes including treatment response in this AML subtype among Thai myeloid neoplasms.

AML data was collected from a national registry which were conducted by Thai acute leukemia working group. Other than AML with *MECOM* rearrangements, AML was categorized as favorable, intermediate, and adverse risk groups according to European Leukemia Network 2022. MDS data was collected from a multicenter study group involving 4 medical centers. Other than MDS with *MECOM* rearrangements, MDS was categorized into 5 risk groups according to R-IPSS score system (very low, low, intermediate, high and very high-risk groups). Myeloid neoplasms with *MECOM* rearrangements were analyzed among their diseases and grouped together and compared to MDS and AML cohorts.

A total of 9 cases of myeloid neoplasms with *MECOM* rearrangement were detected. Among non-M3 AML cases, there were 6 cases with *MECOM* rearrangement from 746 non-M3 AML (0.8%) while 3 cases were detected in 163 MDS (1.8%). Seven of 9 cases (78%) were female gender. Five of 9 cases were classic *MECOM* rearrangement [1 case with inv(3)(q21q26.2) and 4

Downloaded from http://ashpublications.net/blood/article-pdf/142/Supplement 1/4213/2202734/blood-814-main.pdf by guest on 21 May 2024

© 2023 by The American Society of Hematology

cases with t(3;3)(q21;q26)] while the other 4 cases were non-classic rearrangements [3 cases with t(3;21)(q26.2;q22) and 1 case with t(3;7)(q26;q21)].

In the AML cohort, AML with *MECOM* rearrangement showed lower white blood cell, but higher platelet counts compared to other groups (favorable, intermediate, and adverse risk groups) (**Table 1**). Among AML cases receiving intensive chemotherapy, *MECOM* rearrangement subgroup showed lower complete response (CR) rate compared to others favorable, intermediate, and adverse risk groups. (0% vs. 77.3% vs. 37.6% vs. 23.8%; $p<0.001$). Of note, among 6 AML with *MECOM* rearrangement, there were 4 patients who received intensive chemotherapy but none of them responded to the treatment.

In the MDS cohort, MDS with *MECOM* rearrangement showed lower hemoglobin and platelet counts compared to other groups (**Table 2**). Among 3 MDS with *MECOM* rearrangement, one patient received azacitidine with investigational drug (sabatolimab/placebo) and achieved complete hematologic response. He eventually progressed after 12 cycles of the treatments and subsequently died.

When combining 3 MDS and 6 AML with *MECOM* rearrangement as one group and compared survival rate with others: survival rate of 9 myeloid neoplasms with *MECOM* rearrangementis worse than the adverse group of AML and the very high risk group MDS with a 1-year survival rate of 22% (**Figure 1 and 2**).

In conclusion, myeloid neoplasms with *MECOM* rearrangements are rare with the frequency of 0.8% in non-M3 AML and 1.8% in MDS. This subtype is more common in female gender. The prognosis of myeloid neoplasms with *MECOM* rearrangement is dismal with a 1-year survival rate of 16.7% in AML and 6-month survival rate of 33% in MDS. Chemotherapy should be avoided in this subtype due to non-responsiveness, hypomethylating agent showed benefit and can be considered as a bridging treatment before stem cell transplantation. Novel therapy targeting *MECOM* gene should be further explored to improve outcomes in this AML subtype.

Disclosures No relevant conflicts of interest to declare.

Downloaded from http://ashpublications.net/blood/article-pdf/142/Supplement 1/4213/2202734/blood-814-main.pdf by guest on 21 May 2024

Table 1 Characteristics of AML patients categorized by cytogenetic risk groups
Data present n (%), median (IQR), a using Chi-square test and b using Kruskal-Wallis test, rearr=rearrangement

	MECOM rearr	Favorable	Intermediate	Adverse	Total	P-value
N (%)	6 (0.8%)	75 (10.1%)	493 (66.1%)	172 (23.1%)	746 (100)	
Sex						0.084[a]
Female	6 (100.0%)	45 (60.0%)	263 (53.3%)	89 (51.7%)	403 (54.0%)	
Male	0 (0.0%)	30 (40.0%)	230 (46.7%)	83 (48.3%)	343 (46.0%)	
Age at diagnosis	53 (41- 62)	43 (27- 55)	54 (41- 63)	52.5 (40- 63)	53 (40- 62)	<0.001[b]
WBC (x10^{3}cells/uL)	6.9 (3.0- 28.6)	27.7 (8.3- 57.3)	27.2 (6.4- 78.0)	7.9 (2.8- 36.1)	22.1 (5.2- 64.9)	<0.001[b]
Hb (g/dL)	8.4 (7.4- 8.8)	8.0 (6.3- 9.3)	7.9 (6.7- 9.4)	7.9 (6.8- 9.1)	7.9 (6.7- 9.3)	0.846[b]
Platelet (x10^{3}cells/uL)	135 (77-184)	41 (19- 77)	49.7 (22- 90)	49 (25- 87)	48 (23- 88)	0.025[b]
Response						<0.001[a]
Not CR	4 (66.7%)	8 (10.7%)	104 (21.1%)	53 (30.8%)	169 (22.7%)	
CR	0 (0.0%)	58 (77.3%)	185 (37.6%)	41 (23.8%)	284 (38.1%)	
Not evaluate	2 (33.3%)	9 (12.0%)	203 (41.3%)	78 (45.3%)	292 (39.2%)	

Table 2 Characteristics of MDS patients categorized by R-IPSS groups
Data present n (%), median (IQR), a using Chi-square test and b using Kruskal-Wallis test, rearr=rearrangement

	MECOM rearr	Very low risk	Low risk	Intermediate	High risk	Very high risk	Total	P-value
N (%)	3 (1.8%)	25 (15.3%)	63 (38.7%)	30 (18.4%)	23 (14.1%)	19 (11.7%)	163 (100%)	
Sex								0.631
Female	1 (33.3%)	13 (52.0%)	34 (54.0%)	15 (50.0%)	13 (56.5%)	7 (36.8%)	83 (50.9%)	
Male	2 (66.7%)	12 (48.0%)	29 (46.0%)	15 (50.0%)	10 (43.5%)	12 (63.2%)	80 (49.1%)	
Age at diagnosis	76.0 (66.0- 81.0)	73.0 (66.0- 79.0)	72.0 (64.0- 81.0)	68.0 (54.0- 73.0)	69.0 (59.0- 78.0)	71.0 (60.0- 77.0)	71.0 (63.0- 79.0)	0.167
WBC (x10^{3}cells/uL)	1.9 (1.8- 7.0)	3.9 (3.0- 5.2)	4.4 (3.2- 6.8)	3.3 (2.2- 5.4)	3.2 (2.0- 6.1)	2.1 (1.6- 4.8)	3.7 (2.4- 6.0)	0.663
Hb (g/dL)	5.3 (4.6- 6.7)	10.6 (10.0- 11.9)	8.3 (7.2- 9.3)	8.1 (7.1- 10.0)	8.1 (6.9- 8.9)	7.7 (6.6- 8.3)	8.3 (7.1- 10.0)	<0.001
Platelet (x10^{3}cells/uL)	18.0 (7.0- 415.0)	93.0 (71.0- 208.0)	156.0 (69.0- 292.0)	84.0 (46.0- 127.0)	84.0 (43.0- 128.0)	94.0 (39.0- 117.0)	100.0 (59.0- 189.0)	0.002

Figure 1 Survival rate of AML with *MECOM* rearrangement among other AML subgroups by cytogenetic risk

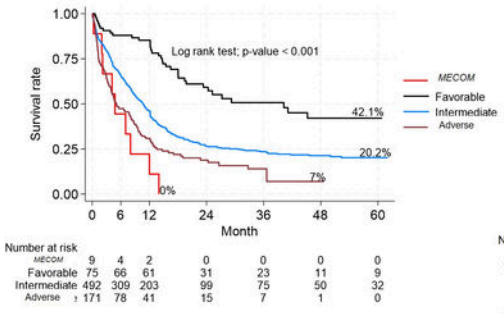

Table Hazard ratio for Cytogenetic risk in for AML patients.
HR : Hazard ratio was estimated by Cox regression

Cytogenetic risk	HR (95%CI)	P-value
Favorable	1	Ref
Intermediate	2.35 (1.66-3.33)	<0.001
Adverse	3.58 (2.46-5.21)	<0.001
MECOM	5.55 (2.65-11.60)	<0.001

Figure 2 Survival rate of MDS with *MECOM* rearrangement among other MDS subgroups by R-IPSS

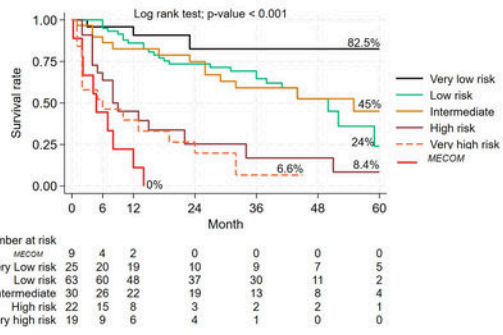

Table Hazard ratio for IPSS risk in for MDS patients
HR: Hazard ratio was estimated by Cox regression

R-IPSS risk	HR (95%CI)	P-value
Very low risk	1	Ref
Low risk	3.49 (1.05-11.59)	0.041
Intermediate	3.36 (0.96-11.79)	0.059
High risk	12.35 (3.59-42.44)	<0.001
Very high risk	18.04 (3.59-42.44)	<0.001
3Q	34.42 (9.01-131.48)	<0.001

Figure 1

https://doi.org/10.1182/blood-2023-180100

Downloaded from http://ashpublications.net/blood/article-pdf/142/Supplement 1/4213/2202734/blood-814-main.pdf by guest on 21 May 2024