

Venetoclax combined with escalating doses of homoharringtonine, low-dose cytarabine, and granulocyte colony-stimulating factor demonstrates feasibility and tolerability for remission induction in pediatric acute myeloid leukemia

Authors

Shengqin Cheng,^{1*} Li Gao,^{1,2*} Jun Lu,^{1,2*} Yixin Hu,^{1,2*} Yi Wang,^{1,2*} Hailong He,^{1,2*} Jie Li,¹ Suxiang Liu,¹ Feiyun Yang,¹ Xiaofang Wu,¹ Liyan Fan,¹ Junjie Fan,^{1,2} Yanhua Yao,¹ Yina Sun,¹ Bohan Li,¹ Yongping Zhang,¹ Shuiyan Wu,¹ Cheng Cheng,³ Peifang Xiao,^{1,2} Raul C. Ribeiro³ and Shaoyan Hu^{1,2,4}

¹Department of Hematology and Oncology, Children's Hospital of Soochow University, Suzhou, China; ²Pediatric Hematology and Oncology Center of Jiangsu Province, Suzhou, China; ³Division of Leukemia/Lymphoma, Department of Oncology, St. Jude Children's

Research Hospital, Memphis, TN, USA and ⁴Pediatric Hematology & Oncology Key Laboratory of Higher Education Institutions in Jiangsu Province, Suzhou, China

**SC, LG, JLu, YH, YW and HH contributed equally as first authors.*

Correspondence:
S. HU - hushaoyan@suda.edu.cn
P. XIAO - xpfdr@163.com
R.C. RIBEIRO - Raul.Ribeiro@stjude.org

<https://doi.org/10.3324/haematol.2024.286832>

Supplementary Tables

Supplementary Table 1. Chemotherapy regimens of V-HAG and indications for HSCT

	Drug	Dose	Schedule	Duration
Induction I/II	HHT	1 mg/m ²	Once daily, intravenously, infusion over ≥ 4 hours	Day1-10
		2 mg/m ²		
		3 mg/m ²		
	Cytarabine	10 mg/m ²	Every 12 hours, intravenously	Day1-10
	Venetoclax	120 mg/m ² (max 400 mg)	Once daily, orally	Day 0
		240 mg/m ² (max 400 mg)	Once daily, orally	Day1-10
	G-CSF	5 µg/kg	Once daily, subcutaneously	Day1-10
Consolidations				
I	Cytarabine	3 g/m ²	Every 12 hours, intravenously	Day 1-3
	HHT	3 g/m ²	Once daily, intravenously	Day 1-5
II	Cytarabine	3 g/m ²	Every 12 hours, intravenously	Day 1-3
	Etoposide	150 mg/m ²	Once per day, intravenously	Day1-3
III	Cytarabine	3 g/m ²	Every 12 hours, intravenously	Day 1, 2, 8, 9
	L-asparaginase	6000 U/m ²	Once per day, intramuscularly	Day 3,10
Criteria for HSCT	Numeric changes: Complex karyotype, or chromosome 5, 7 or 17p abnormalities. Fusion genes: <i>NUP98</i> -rearranged, <i>KMT2A</i> -rearranged (except <i>KMT2A::MLLT11</i> and <i>KMT2A::MLLT3</i>), <i>KMT2A</i> -PTD, <i>MECOM</i> -rearranged, <i>CBFA2T3</i> -rearranged, <i>DEK::NUP214</i> , <i>ETV6::HLXB9</i> , <i>BCR::ABL</i> , <i>KAT6A::CREBBP</i> , <i>FUS::ERG</i> , <i>PICALM::MLLT10</i> . Pathogenic gene variants: <i>FLT3-ITD</i> , <i>TP53</i> , <i>KIT</i> (exon 17), <i>UBTF-ITD</i> , <i>ASXL1</i> , <i>BCOR</i> , <i>EZH2</i> , <i>RUNX1</i> , <i>SF3B1</i> , <i>SRSF2</i> , <i>STAG2</i> , <i>U2AF1</i> , <i>ZRSR</i> . MRD: ≥ 0.1% after induction II.			After consolidation I or II

Abbreviations: HHT, homoharringtonine; V-HAG, venetoclax, HHT, cytarabine, granulocyte colony-stimulating factor; G-CSF; HSCT, hematopoietic stem cell transplantation; MRD, measurable residual disease.

Supplementary Table 2. Adverse events of HAGV treatment regimens during Induction I and II

	V-HAG group
Induction I (N)	12 cases
Hematological toxicity	
Time to recovery neutrophil count $> 0.5 \times 10^9/L$ (days, median, range)	22 (14-38)
Time to recovery platelet count $> 20 \times 10^9/L$ (days, median, range)	16 (10-28)
Non-hematological toxicity	
Gastrointestinal events (all grades, N, %)	7 (58.3%)
Cardiac events (all grades, N, %)	6 (50.0%)
Grade 3-5 Cardiac events (N, %)	0
Infection events (all grades, N, %)	11 (91.7%)
Grade 3-5 Infection events (N, %)	11 (91.7%)
Induction II (N)	11 cases
Hematological toxicity	
Time to recover neutrophil count $> 0.5 \times 10^9/L$ (days, median, range)	18 (7-34)
Time to recover platelet count $> 20 \times 10^9/L$ (days, median, range)	15 (0-29)
Non-hematological toxicity	
Gastrointestinal events (all grades, N, %)	5 (41.2%)
Cardiac events (all grades, N, %)	4 (33.3%)
Grade 3-5 Cardiac events (N, %)	0
Infection events (all grades, N, %)	6 (54.5%)
Grade 3-5 Infection events (N, %)	6 (54.5%)

Abbreviations: V-HAG, venetoclax, homoharringtonine, cytarabine, and granulocyte colony-stimulating factor.

Supplementary Table 3. Comparison of selected adverse events and treatment responses between low- and high-ratio venetoclax concentrations

	Induction I		Induction II	
	Low ratio concentration	High ratio concentration	Low ratio concentration	High ratio concentration
	N=6	N=6	N=6	N=5
Gastrointestinal events	2	2	1	2
Cardiac events	3	3	0	1
Infection events	6	5	4	2
Grade 3-5 Infection events	6	5	4	2
Time to neutrophil recovery (> 0.5 x10⁹/L), days	23.5 (16-38)	21(18-27)	16 (3-34)	16 (0-27)
Time to platelet recovery (>20 x10⁹/L), in days	17.5 (11-28)	14 (10-19)	3 (0-29)	3 (0-13)
CR	4	6	6	5
Negative MRD*	2	6	6	5

* During Induction I, the cut-off for negative MRD was set at <1%, while during Induction II, the threshold was <0.1% for negative MRD.