OLVEREMBATINIB (HQP1351) COMBINED WITH BLINATUMOMAB IN PATIENTS WITH LYMPHOID BLAST PHASE CHRONIC MYELOID LEUKEMIA (CML-LBP) OR PHILADELPHIA CHROMOSOME–POSITIVE B-CELL PRECURSOR ACUTE LYMPHOBLASTIC LEUKEMIA (PH+ BCP-ALL)

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INTRODUCTION

- TKIs combined with blinatumomab have been widely studied as a chemotherapy-free treatment strategy in patients with Ph+ ALL and CML in lymphoid blast phase.
- Ponatinib + blinatumomab demonstrated very high CR/CRi and CMR rates, rapid molecular responses, and durable survival in such populations.
- Emerging evidence with olverembatinib suggests promising activity in Ph+ ALL and CML.
- This study evaluated olverembatinib plus blinatumomab as a chemotherapy-free regimen in patients with CML-LBP or Ph+ BCP-ALL.

METHODS

Phase 1b, open-label study — Adults with CML-LBP or Ph+ BCP-ALL who were TKI-resistant/intolerant or MRD-positive

3+3 dose-escalation design; safety and efficacy evaluated, including hematologic, molecular, and MRD responses.

Baseline characteristics (N = 13)

Characteristics, n (%)	
Age, median (range), yr	48 (32-68)
≥ 60	4 (30.8)
Male	8 (61.5)
Race	
Asian	1 (7.7)
Black or African American	3 (23.1)
White	5 (38.5)
Not reported	4 (30.8)
ECOG PS, n (%)	
0-1	12 (92.3)
2	1 (7.7)
T315I-mutated	2 (15.4)
Prior blinatumomab therapy	8 (61.5)
CD19 expression, present/positive	9 (69.2)
White blood cell count (x 10^9/L)	4.7 (2-171)
Blast cells from bone marrow	3 (0-93)
BCR::ABL1 transcript type	
p190	9 (69.2)
p210	2 (15.4)
Other	2 (15.4)
Disease type	
Ph+ B-cell precursor (BCP) ALL	12 (92.3)
Lymphoid blast phase CML (CML-LBP)	1 (7.7)
Cardiovascular risk factors	
Hypertension	7 (53.8)
Hyperlipidemia	5 (38.5)

EFFICACY

Efficacy: response rates

91% — **CR** — 10/11 patients

67% — **MR4.0** — 8/12 patients

80% — **Flow MRD negative** — 8/10 patients at 10^{-4}

Response, n (%)	Total
CR	10/11 (90.9)
CR after 1 cycle	9/11 (81.8)
MRD negative (BCR::ABL1)	
MR4.0	8/12 (66.7)
MR4.0 after 1 cycle	5/12 (41.7)
MR5.0	7/12 (58.3)
MRD negative (flow cytometry)	
At 10^{-4} sensitivity	8/10 (80)
At 10^{-4} sensitivity after 1 cycle	7/10 (70)

PATIENT DISPOSITION

Total enrolled N = 13

Discontinued n = 8

Bridged to CAR-T or transplant (n = 5)

- Achieved response and bridged to CAR T-cell therapy (n = 3)
- Achieved response and bridged to transplantation (n = 2)
- Experienced progressive disease (n = 1)
- Achieved response; consent withdrawal (n = 1)
- Achieved MMR; treatment discontinuation due to adherence issues (n = 1)

Ongoing treatment n = 5

Efficacy takeaways:

- Olverembatinib plus blinatumomab demonstrated robust antileukemic activity, achieving a CR rate of 91% and deep molecular responses.
- MR4.0 was observed in 67% of evaluable patients, while 80% achieved MRD negativity by flow cytometry, including 70% after 1 cycle.

SAFETY

Treatment-related adverse events (TRAEs)

46% — **Olverembatinib grade 3/4 TRAEs** — 6/13 patients

39% — **Blinatumomab grade 3/4 TRAEs** — 5/13 patients

8% — **SAEs for each agent** — 1/13 patients

Olverembatinib	Any grade, n >1, n (%)		Grade 3/4, n (%)		SAE, n (%)
Any TRAE	9 (69.2)	Any grade 3/4 TRAE	6 (46.2)	Any SAE	1 (7.7)
Headache	3 (23.1)	Neutropenia	3 (23.1)	Pancreatitis	1 (7.7)
Neutropenia	3 (23.1)	Blood CPK increased	1 (7.7)		
Blood CPK increased	2 (15.4)	Lipase increased	1 (7.7)		
Pancreatitis	2 (15.4)	Pancreatitis	1 (7.7)		
Rash	2 (15.4)	Thrombocytopenia	1 (7.7)		

Blinatumomab	Any grade, n >1, n (%)		Grade 3/4, n (%)		SAE, n (%)
Any TRAE	9 (69.2)	Any grade 3/4 TRAE	5 (38.5)	Any SAE	1 (7.7)
ALT increased	3 (23.1)	Neutropenia	3 (23.1)	Hypotension	1 (7.7)
AST increased	3 (23.1)	ALT increased	1 (7.7)		
Cytokine release syndrome	3 (23.1)	AST increased	1 (7.7)		
Headache	3 (23.1)	Blood CPK increased	1 (7.7)		
Neutropenia	3 (23.1)	Hypotension	1 (7.7)		
Hyperhidrosis	2 (15.4)				
Pyrexia	2 (15.4)				

Safety takeaways: manageable safety profile; neutropenia was the most common grade 3/4 TRAE (23.1%); no grade ≥3 CRS, ICANS, or arterial occlusive events were observed.

CONCLUSIONS

- TKIs + blinatumomab represent a chemotherapy-free regimen in Ph+ ALL associated with high survival.
- Olverembatinib + blinatumomab resulted in favorable and deep responses in patients with CML-LBP and Ph+ BCP-ALL.
- This treatment strategy was a successful bridge to CAR-T and transplantation in several patients.
- The combination had a manageable safety profile, with no new safety signals.

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