Mixed phenotypic acute leukemia -clinical presentation, prognosis and outcomes of patients treated with ALL like protocols- a multi-institutional study from India.

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INTRODUCTION

Mixed phenotypic acute leukemia (MPAL) is a rare and difficult to treat type of acute leukemia. Broad consensus favour use of acute lymphoblastic leukemia like treatment protocols in the management of MPAL. We report epidemiology and real-world outcome data of MPAL patients treated with ALL like protocols among the multi-institutional data base set up by haematology cancer consortium (HCC) in India.

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AIM

- To determine the treatment outcomes of patients diagnosed with mixed phenotypic acute leukemia (MPAL) treated with ALL like protocols.
- The primary objective was to evaluate event-free survival (EFS) at 1 year.
- Secondary objectives were to evaluate the overall survival (OS).

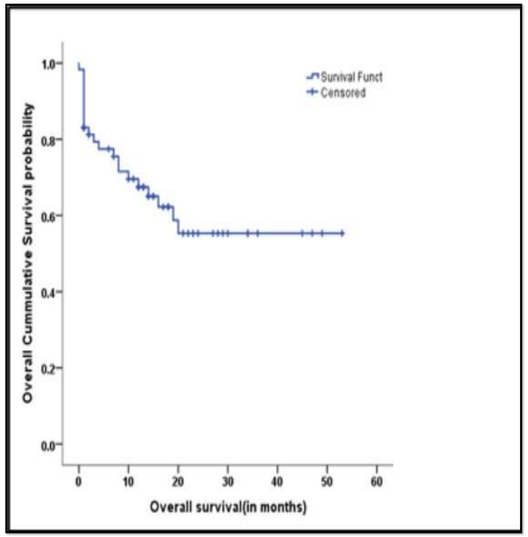
METHOD

In this retrospective multicentric study of a prospectively maintained data set, we collected data from eleven member centres of HCC using an electronic database. Patients who fulfilled the WHO 2016 classification criteria for MPAL between January 2018 and March 2022 were included. The data included demographic details, performance status, comorbidities, CNS involvement, testicular involvement, presence of mediastinal mass, phenotype, karyotype, FISH, PCR, NGS abnormalities and protocol used for treatment.

RESULTS

114 patients were included. The baseline characteristics are tabulated in the adjoining table. Sixty-six (58%) patients were treated with ALL like treatment protocols and 48(42%) patients did not receive any treatment. 49(74%) patients received paediatric inspired protocols and 17(26%) patients received adult-type of protocols.43(65%) patients achieved a complete remission after induction. 10 (15%) patients died during induction. 6(9%) patients died after achieving CR of which 3 died due to infection and 3 died due to progressive disease. MRD data was available in 37 patients among these patients MRD negative status was achieved in 20(54%) patients post induction.

After a median follow up of 12 months, EFS was 61% and OS was 67%(figure1). Estimated EFS and OS at 24 months were 42% and 55% respectively. There were no significant differences in EFS and OS between different MPAL phenotypes. Allogeneic stem cell transplant (ASCT) was performed only in 3 patients



Overall Survival Analysis

Variable	Overall (n=114)
Age(n=114)	Median-32.82±14.13
Gender (n= 114)	
Male	79(69.3%)
Female	35(30.7%)
LDH(n=99)	Median-446.00 IQR-294.00-905.00
Baseline WBC Count (in cells/µL)	Median-14,410 IQR-4015-49230
MPAL (Type)	
T+B	8(7.08%)
B+ myeloid	24(21.24%)
T+ myeloid	59(52.21%)
Unknown	22(19.47%)
CNS involvement	
CNS-1	56(50.45%)
CNS-2	5(4.5%)
CNS-3	5(4.5%)
Not Available	45(40.54%)
MPAL) with t(9;22) (q34.1;q11.2);BCR-ABL1	18 (16%)

CONCLUSIONS

Our study is one of the largest studies conducted on MPAL patients in a resource limited setting. Induction mortality of 10% was comparable to other similar studies. However, the worse 2-year EFS and OS may be explained by poor access to allogeneic stem cell transplant (Allo-HSCT). The abandonment of treatment and poor access to Allo-HSCT were major limitations in improving overall outcomes in our patients.

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ACKNOWLEDGEMENTS

Patients and their families
CDMC- CMC Vellore.
Dr. Vikram Mathews& Dr. Manju Sengar-Hematology Cancer Consortium.

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