CYTOREDUCTIVE PARADIGMS FOR HYPERLEUKOCYTOSIS IN ACUTE LEUKEMIA, USING VENETOCLAX BASED REGIMENS

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Introduction

Hyperleukocytosis is defined as White Blood Count (WBC) greater than 100000/microliter. It is seen in Acute Leukemia (AL) and Chronic Leukemia (CL). However, the complications of leukocytosis with leukostasis, Diffuse Intravascular Coagulation (DIC) and tumor lysis (TLS) are usually hallmarks of AL, particularly in **Acute Myeloid Leukemia (AML).** There is **no standard for management**. Controversy exists regarding the use of leukapheresis[1] versus initiation of chemotherapy.[2] **Venetoclax** is a bcl2 inhibitor that is being used as chemotherapy management of AL. Here we report our experience using novel combination targeted therapy with Venetoclax for cytoreduction.

Methods

This is a retrospective analysis of AL patients seen in a public tertiary care hospital in the emirate of Abu Dhabi in United Arab Emirates. The study period is between January 2023 to June 2024. Data was abstracted from the electronic medical records including patient demographics, diagnosis, laboratory values and treatment.

Conclusion

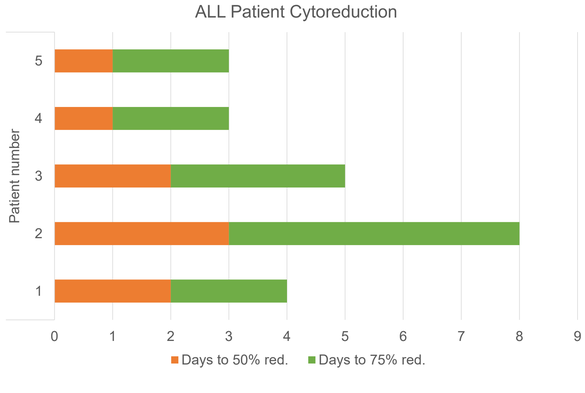
The current experience using dexamethasone, Hydroxyurea and Venetoclax gives an alternate (leukapheresis and Cyclophosphamide/Cytarabine) and safe option for cytoreduction prior to exact diagnosis and initiation of therapy.

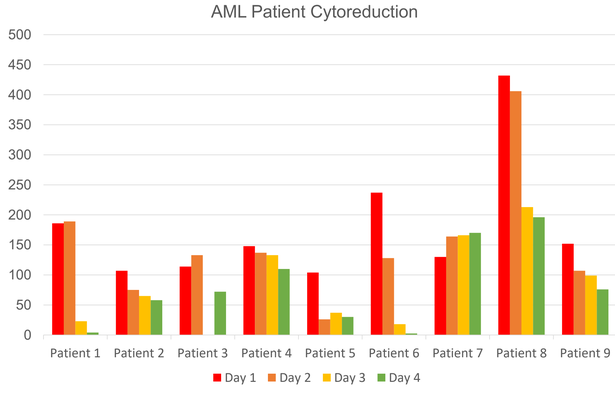
Results

- Sixty-five patients presented with clinical features suggestive of AL.
  - Fourteen (21 %) patients had hyperleukocytosis.
  - The median age of the patients was 30 years (range 19 to 60 years).
  - The median WBC was 134000/microliter (range 104-432,000/microliter).
- Diagnostic work up included bone marrow biopsy with flow cytometry, karyotype analysis, Fluorescence in situ hybridization (FISH) and molecular studies (30 gene panel and FLT3 PCR).
  - The median period of reporting of the bone marrow result was 3 days (range 0-7 days).
- Cytoreductive therapy was given with Dexamethasone 20 -40 mg intravenously daily with Hydroxyurea 2000 mg orally daily and Venetoclax orally (escalating from 100 mg day 1, 200 mg day 2 and 400 mg day 3 and onwards) while awaiting diagnosis.
  - There was a 50 % reduction of WBC by day 3 in most patients (64%).
  - A WBC of less than 50000/microliter was achieved by day 4 in 57% of the cohort.
- There was biochemical evidence of tumor lysis. This was managed medically by hydration, prevention of hyperuricemia and correction of electrolytes. Dialysis and critical care were not required.

- Six patients refused further therapy and were lost to follow-up. Three patients died during induction period. Two patients went for allogeneic hematopoietic stem cell transplant; two patients had relapsed and refractory disease while one patient is in sustained remission post consolidation chemotherapy.

Patient Progress Charts





References

1.Stahl M et al Leukaemia 2020
2.Zhao J et al. Leuk Lymphoma 2021