

Introduction

Acute myeloid leukaemia (AML) is a malignant disease that results from the infiltration of immature myelogenous cells into the blood, bone marrow, and other organs, eventually leading to ineffective haematopoiesis and bone marrow failure. The diagnosis of AML typically requires the presence of 20% myeloid blast cells in the bone marrow. However, in cases where AML-defining genetic abnormalities (e.g., t(8;21), inv(16), t(15;17), etc.) are present, the diagnosis can be made regardless of the blast percentage. Management of AML focuses on supportive treatments such as transfusion support, antibiotics, prevention and management of tumor lysis syndrome, and chemotherapy. T lymphocytes and NK cells are well known to provide an immune response against leukaemia cells.

Aim of the Work

The aim of this study was to assess the impact of NK cells and the CD4/CD8 ratio on induction chemotherapy in patients with newly diagnosed AML.

Subjects and Methods

A sample of 30 patients with de novo AML, eligible for standard induction chemotherapy at Alexandria Main University Hospital, Hematology Unit, were included in this study. Peripheral blood samples were collected before starting chemotherapy, and immunophenotyping was performed to determine the proportion of CD4, CD8, and NK cells. Subsequently, the absolute count of CD4, CD8, and NK cells was obtained based on the CBC of the same samples. We compared the results with those from 15 age- and sex-matched healthy controls.

Results

The absolute count of both CD4 and CD8 lymphocyte subsets was significantly higher in AML patients compared to healthy subjects (mean CD4: 2840.1 ± 2005.5 vs 851.8 ± 204.9 , $P < 0.001$; mean CD8: 1877.3 ± 1931.4 vs 609.5 ± 237.1 , $P = 0.001$). The absolute NK cell count was also significantly higher in AML patients than in controls (mean NK cells: 587.3 ± 545.0 vs 226.8 ± 172.8 , $P = 0.018$). The CD4/CD8 ratio among AML patients, compared to healthy individuals, showed no statistically significant difference (mean: 1.93 ± 1.06 vs 1.54 ± 0.56 ; $P = 0.155$).

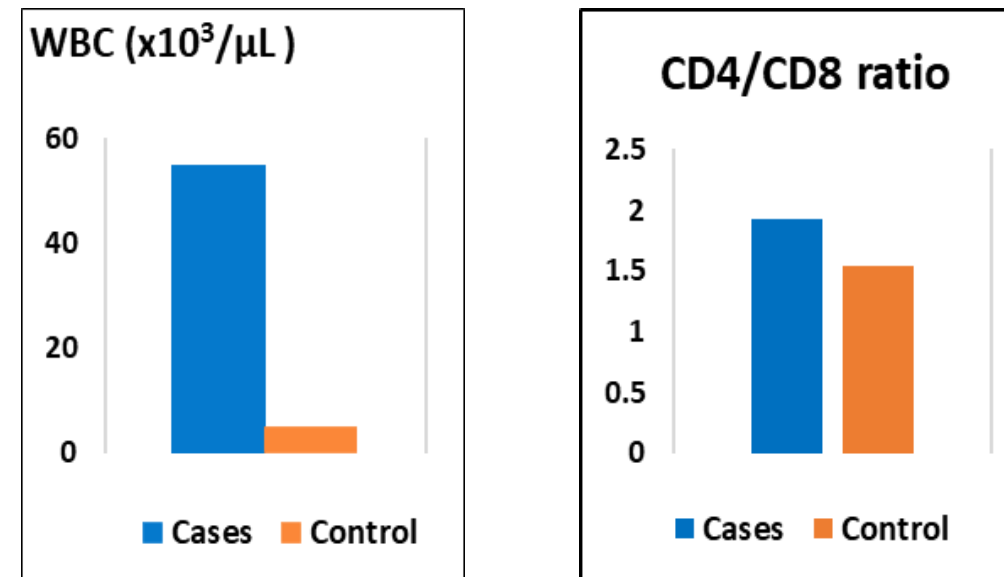


Figure 1: Comparison of Initial WBC and CD4/CD8 ratio between two groups

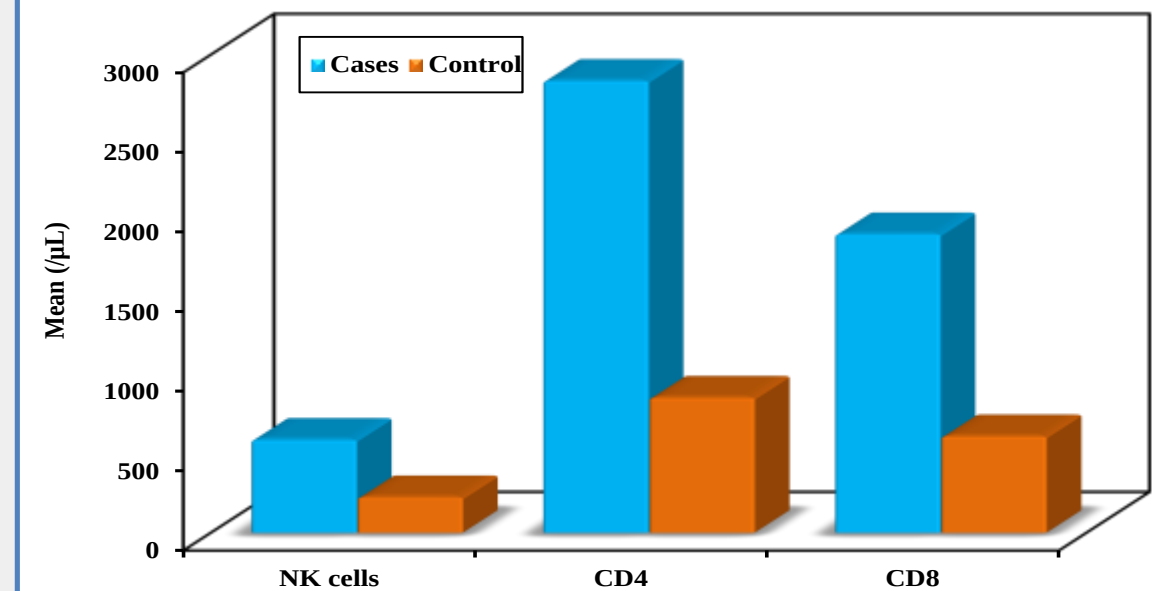


Figure 2: Comparison of absolute NK cells, CD4 and CD8 between two groups

Conclusion

This study showed that AML patients have significantly higher counts of absolute CD4 lymphocytes, CD8 lymphocytes, and NK cells compared to healthy individuals. However, no significant difference was found in their relative counts (percentages) between the two groups. This study also showed no significant difference in the CD4/CD8 ratio between AML patients and healthy subjects.