EFFECT OF CYTOMEGALOVIRUS REACTIVATION ON RELAPSE OF ADULT ACUTE LEUKEMIAS AFTER FULLY MATCHED ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION

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Introduction

Acute leukemia is an aggressive hematopoietic malignancy with a dismal prognosis. Allogeneic hematopoietic stem cell transplantation (allo-HSCT) is still the best option for high and intermediate risk fit patients. Despite advances in managing complications, relapses and infection after transplantation, still have suboptimal outcomes.

Objectives

To study the relation between cytomegalovirus (CMV) reactivation (CMV-R) after allo-HSCT from fully matched related donor and relapse rate of acute myeloid leukemia (AML) and acute lymphoblastic leukemia (ALL) cases.

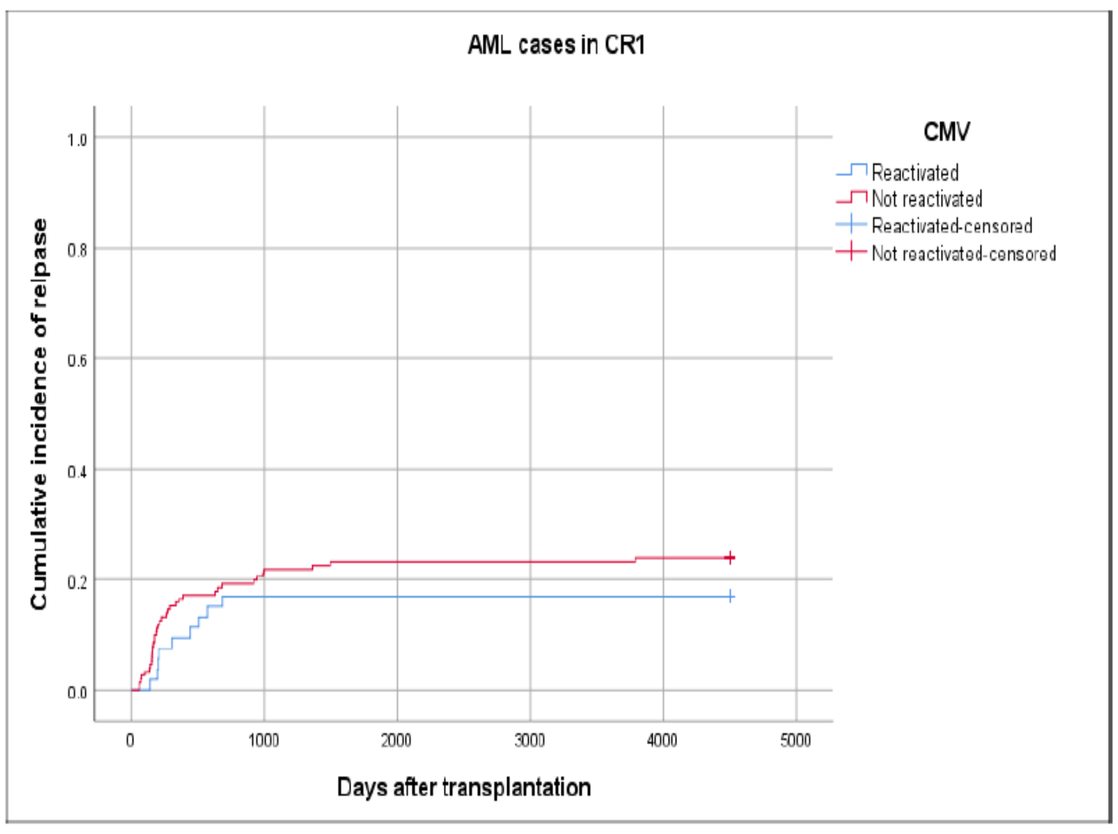
Methods

Retrospective study, data collected between 2006 and 2020. This study conducted at Nasser institute, Egypt. The study included 409 patients, 279 AML and 130 ALL patients. The CMV status of the patients after transplant was classified into undetected, detected not indicated for anti CMV therapy, and detected treated with anti CMV therapy. Among 409 acute leukemia patients, 90 relapsed (59 AML, 31 ALL), 142 died from non-relapse mortality (NRM) causes (97 AML, 45 ALL).

Results

Patients with CMV-R after transplantation experienced a statistically significant 50% reduction in the risk of AML relapse (hazard ratio 0.5) compared to those without reactivation. The cumulative AML relapse incidence was 12.7% in the CMV-R group and 24.5% in the non-reactivation group (P = 0.029, 95% confidence interval (CI) = 0.28 – 0.97). Despite this beneficial impact, CMV-R isn't associated with any better disease-free survival (DFS) due to the increased rate of non-relapse related mortality (NRM). Detected untreated CMV patients showed lower relapse incidence than treated patients & undetected CMV patients, but this relation was not strong enough to be statistically significant (P = 0.1).

The protective effect of CMV against relapses is more significant in patients who received myeloablative conditioning regimen (P = 0.041) and in patients in second and third remission state (P = 0.016). On the other hand, CMV-R has no significant impact on ALL relapse rates or DFS.



Cumulative relapse incidence in AML who were in CR1 prior to transplantation according to CMV reactivation status.

Conclusion

CMV-R was associated with reduced risk of relapse in patients with AML without survival benefit, explained by the increased incidence of NRM in these patients. Further studies needed to validate the protective effect of CMV-R on AML relapse.

References

1.Lee et al., 2019. Post-remission strategies for the prevention of relapse following allogeneic hematopoietic cell transplantation for high-risk acute myeloid leukemia: expert review from the Acute Leukemia Working Party of the European Society for Blood and Marrow Transplantation. Bone marrow transplantation, 54(4), pp.519-530.

2.McMahon et al., 2019, April. Maintenance therapy in acute myeloid leukemia: What is the future? In Seminars in Hematology (Vol. 56, No. 2, pp. 102-109). WB Saunders.