17TH MSH SCIENTIFIC MEETING
2-4 April 2020 | Shangri-La Hotel KUALA LUMPUR
ABSTRACT SHARING
Malaysian Society of Haematology

IMPACT OF DONOR CHIMERISMS MONITORING FOLLOWING ALLOGENIC STEM CELL TRANSPLANTATION: SINGLE-CENTER EXPERIENCE IN MALAYSIA

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Background

An accurate and sensitive determination of chimerism status is mandatory after allogeneic hematopoietic stem cell transplantation (ASHCT). Analysis of chimerism following AHSCT has been a routine method for the assessment of engraftment and early detection of graft failure. The aim of this study is to determine the relationship between chimerism results and the impact on the clinical outcomes following AHSCT in adult patients with haematological malignancy.

Materials and Methods

We reviewed data on adult recipients post AHSCT with underlying malignant haematological disorder between December 2008 and November 2019 at the University Malaya Medical Centre. We excluded patients who were transplanted for primary myelofibrosis and aplastic anaemia where it is difficult to accurately define relapse and patients who did not have available results of chimerism results. Chimerism was evaluated on days +30, +60 and +90 after the transplant. Short tandem repeat polymerase chain reaction (STR PCR) was used to analyse chimerism. The percentages of total donor chimerism were grouped as 100%–96% and less than 96%. Patients' outcome including relapse, death and other transplant related data like disease, transplant type, conditioning regimen, stem cell dose, recipient age, and disease status at transplantation, graft versus host disease (GVHD) were collected.

Results

Among 80 patients, the relapsed rate is 20% which is comparable to other studies. Patient with <96% chimerism on day +30 have higher rate of relapse but not significant. However, patients with ≥96% donor chimerism on day +60 was observed to significantly have a lower chance of relapse (p=0.002). This highlights that day +60 chimerism analysis are predictive for relapse. Similarly, patient's with ≥96% donor chimerism on day +60 have a significantly better overall survival (p=0.004). No significance were observed in total donor chimerism on risk of GVHD.

Conclusion: The data presented in this study provide valuable insight into the analysis of chimerism monitoring in adult with haematological malignancy treated with AHSCT in our centre. Our findings suggest that day 60 monitoring of chimerism after HSCT may be a helpful tool in predicting relapse. This will be especially relevant in a resource limited institution whereby other methods of monitoring for relapse such as MRD is not available. This will be useful to guide the transplant physicians in more vigilant monitoring and possibly reduction of immunosuppressant. Prospective observational studies and multicentre retrospective studies on larger groups of patients will be helpful to confirm these findings.

Key wards: Chimerism, Engraftment, Allogeneic Haematopoietic stem cell transplantation