# C-43 :

# AUTOLOGOUS STEM CELL TRANSPLANT (ASCT) OUTCOME FOR MULTIPLE MYELOMA IN A TERTIARY REFERRAL CENTRE

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## Introduction

Multiple Myeloma (MM) is characterized by the presence of clonal plasma cells and these malignant cells often result in complications including bone destruction, hypercalcemia, renal insufficiency and anaemia.[1,2]
Induction with a triplet/quadruplet regimen followed by autologous stem cell transplant (ASCT) has remained the standard of care for eligible patients to achieve a durable remission.[3,4]

## Materials and Methods

This is a retrospective analytical study to determine the outcome of Multiple Myeloma patients who underwent ASCT in Hospital Ampang. We included a 5-year cohort of patients transplanted from 1st July 2014 to 30th June 2019. Data were obtained through the electronic medical records. Prognostic factors were analyzed using simple Cox proportional hazard regression analysis. All analyses were done using R version 3.6.2 with validated statistical packages.

## Results

139 patients were analyzed. The median follow up time is 17.3 months. The median age at transplant was 56 years old and 56.1% are males (n=78). The most common subtype is IgG Kappa (n=67, 48.2%). Among the patients in which the International Staging System (ISS) could be determined, 33.3% (31 out of 93) of patients have advanced stage III disease and 18% (9 out of 50) have high risk cytogenetics [i.e. t(4;14), t(14;16) and del 17p]. The most common induction received before ASCT was a bortezomib (proteasome inhibitor) based regimen (n=55, 39.6%) and an immunomodulatory (IMiD) based regimen (n=36, 25.9%) with 45 (32.4%) patients receiving a combination of both.

63.3% of patients (n=88) achieved at least a very good partial response (VGPR) before ASCT. Most patients received myeloablative conditioning (MAC) (n=119, 85.6%). The mean cell dose is 3.68 x $10^6$/kg. The median time to engraftment was 11 days for both platelet and absolute neutrophil count (ANC). 6 patients (4.3%) had transplant-related mortality (TRM). IgA subtype was found to adversely affect PFS. The use of maintenance therapy and the absence of renal impairment was associated with a better PFS and OS.

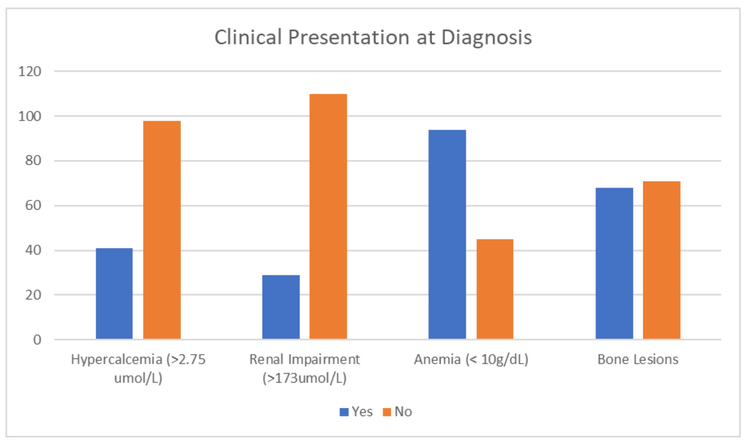


**Figure 1. Clinical presentation of MM at diagnosis**

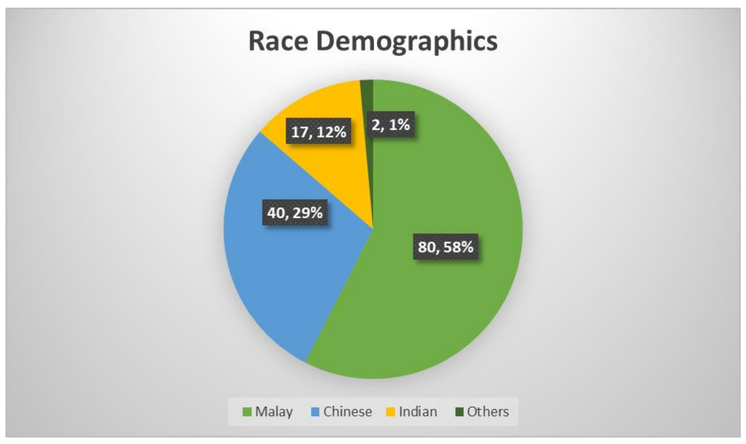


**Figure 2. Racial Demographics of MM**

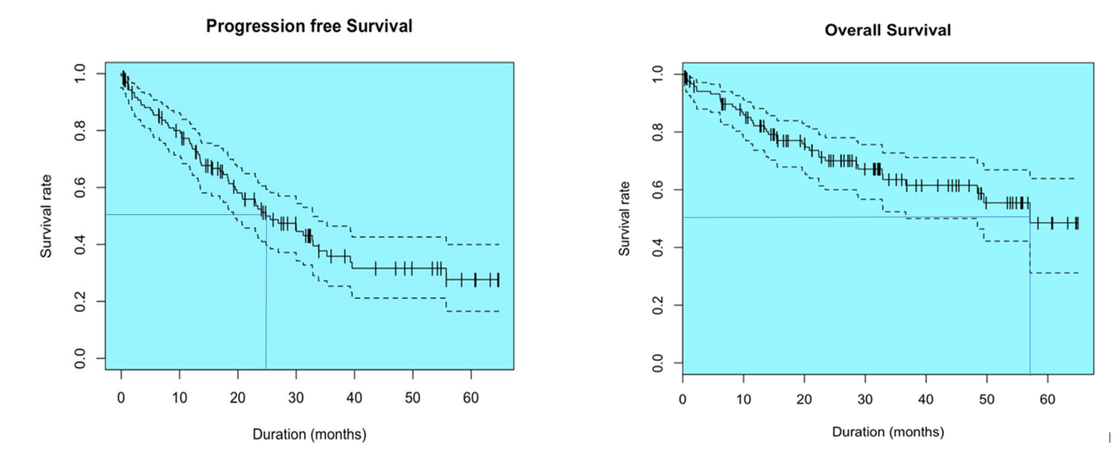


**Figure 3 and 4. The median progression-free survival (PFS) is 24.8 months (95% CI 19.6, 32.9) with the median overall survival (OS) of 57.1 months.**

**Table 1: Prognostic factors for Progression-Free Survival (PFS) using Multiple Cox Regression**

| No | Variable | Adjusted HR (95% CI) | P-value |
|---|---|---|---|
| **1** | **Myeloma subtypes** | | 0.061 |
| | – IgG | 1.0 | |
| | – IgA | 2.51 (1.23 – 5.12) | 0.012 [a] |
| | – Others | 0.91 (0.35 – 2.33) | 0.838 [a] |
| **2** | **Renal Impairment** | | |
| | – No | 1.0 | |
| | – Yes | 2.21 (1.12 – 4.36) | 0.032 |
| **3** | **Maintenance treatment** | | |
| | – No | 1.0 | |
| | – Yes | 0.32 (0.16 – 0.66) | <0.001 |

HR = hazard ratio [a] Z statistic, Z test

**Table 2: Prognostic factors for Overall Survival (OS) using Multiple Cox Regression**

| No | Variable | Adjusted HR (95% CI) | P-value |
|---|---|---|---|
| **1** | **Renal Impairment** | | |
| | – No | 1.0 | |
| | – Yes | 2.96 (1.31 – 6.66) | 0.015 |
| **2** | **Maintenance treatment** | | |
| | – No | 1.0 | |
| | – Yes | 0.36 (0.14 – 0.93) | 0.022 |

HR = hazard ratio [a] Z statistic, Z test

## Discussion and conclusion

Multiple Myeloma is a condition with a poor outcome. Various staging systems have been established to assess tumor burden and to identify high risk patients based on laboratory markers and cytogenetic abnormalities.[5,6]

Our study found that ASCT following induction treatment is safe and beneficial to achieve a deeper remission status and better PFS/OS compared to non transplanted patients.[5] In our study the addition of maintenance therapy is associated with an improved outcome in PFS and OS with the IgA subtype of MM and a presence of renal failure at diagnosis conferring a poorer outcome.

This study is limited by its lack of comprehensive data (e.g. revised ISS staging and treatment responses) and its retrospective nature of the analysis. Despite being the major transplant centre in Malaysia, a comprehensive multicentre prospective study for the entire nation will be beneficial.

Nonetheless, our study has highlighted the importance and feasibility of ASCT as a consolidative treatment especially in a resource-limited setting. With the availability of novel treatments (monoclonal antibodies and immunotherapies), it remains to be seen if outcomes of our patients will be improved in the future.

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