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Autologous stem cell transplantation for selected myeloma patients aged >70 years is safe and effective and similar to that of younger patients: a single centre experience

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INTRODUCTION

High dose chemotherapy followed by autologous stem cell transplantation (ASCT) is known to be a safe and effective treatment for multiple myeloma patients.

High-dose chemotherapy followed by ASCT is currently the standard of care in newly diagnosed myeloma.

European Society for Medical Oncology recommends ASCT in patients up to the age of 70 whilst the National Comprehensive Cancer Network guidelines do not set an age cut off for ASCT eligibility.

Historically the age cut off to determine ASCT eligibility in clinical trials was 65 years(1).

Personalizing therapy on the basis of patient fitness or frailty may improve patient outcomes in older adults, but requires prospective clinical trials (2).

Population studies are showing an increasing trend for the use of Melphalan autografts in patients >65 years (2).

No prospective trials are available to date which identify the optimal dose of Melphalan in older patients (3)

AIM

The primary aim of this study was to confirm the safety and efficacy of autologous stem cell transplantation in patients with myeloma who are older than 70 over a period of 10 years in a single-centre retrospective study.

The secondary aim was to look at the different doses of melphalan used and compare the morbidity/mortality of this.

METHOD

A total of 37 patients over 70 years of age received a first autograft at Nottingham City Hospital from January 1, 2008 to December 31, 2018. There were 7 other patients who underwent a 2nd autograft over 70 years of age, however, these patients were excluded.

Data was collected retrospectively, retrieved from the electronic hospital records and transplant registry.

Data collected included the HCT-CI, Salmon and Durie stage, Age at transplantation, Induction treatment, 100 - day morbidity/mortality, dose of Melphalan; type of mobilisation regimen (cyclophosphamide/ G-CSF/Plerixafor); time to neutrophil and platelet engraftment; duration of in-patient stay.

Overall survival curve (Kaplan–Meier survival plot) constructed and data presented in percentages.

RESULTS

34 myeloma patients (91.9%) received ASCT in first remission

Table 1:Patients, Disease and Treatment related characteristics

Variable	Frequency
Median age, year (range)	71.3 (70.0-73.9)
HCT – CI[a]	
0	28 (78.4%)
1	5 (13.5%)
3	2 (5.4%)
4	1 (2.7%)
Salmon and Durie Stage	
Ia	4 (10.8%)
IIa	5 (13.5%)
IIIa	12 (32.4%)
IIIb	8 (21.6%)
Unknown	8 (21.6%)
Melphalan dose	
200mg/m^2	29 (78.4%)
140mg/m^2	8 (21.6%)
Mobilisation regimen	
Cyclophosphamide and G-CSF	17 (45.9%)
G-CSF alone	9 (24.4%)
G-CSF and Plerixafor	7 (18.9%)
Unknown	4 (10.8%)
Mean time to engraftment, days (range)	
Neutrophil count	11.6 (10-15)
Platelet count	12.0 (10-15)
Mean in patient stay, days (range)	18.4 (13-34)
30-day, 100-day mortality	1 (same patient)

a This data was not available for one patient

Figure 1: Transplant related morbidity and mortality

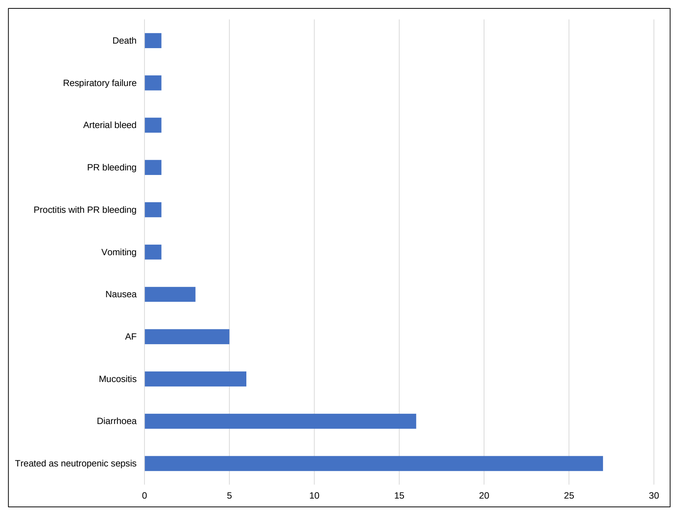


Figure 2: Overall survival after ASCT

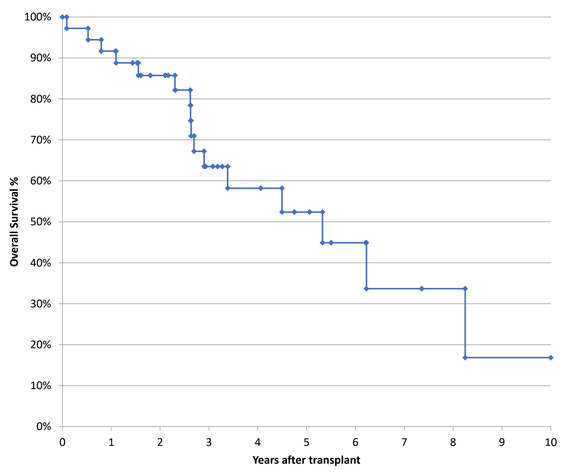
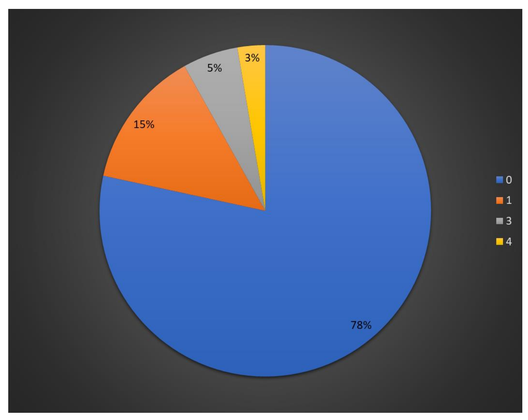


Figure 4: HCT-CI



CONCLUSIONS

In this group of 37 patients aged > 70 years there was only 1 death following neutropenic sepsis

Our analysis shows that, despite most patients receiving full dose Melphalan, the toxicity was very low and TRM rate 2.3% similar to that seen for younger patients.

The incidence of treatment related morbidity was similar to that seen in younger patients

This can probably be explained by the fact that these elderly patients were highly selected and had low HCT-CI scores (78% = 0 and 93.2% <3).

We do not know how many other myeloma patients aged > 70 were not considered for ASCT as they were not considered fit enough

We acknowledge that further analysis is required to

-Compare toxicities and outcomes to the younger group of patients (Matched-pair analysis)
-Comparison to a non-transplanted group with similar ages and characteristics
-Expanding data collection to include all patients ≥70 receiving an autograft
-Assess the impact of novel agents during induction and maintenance

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