OUTCOME OF PATIENTS WITH MULTIPLE MYELOMA WHO UNDERGO AUTOLOGOUS STEM CELL TRANSPLANTATION FOLLOWED BY RENAL TRANSPLANTATION: A CASE SERIES REPORT

M. Ibrahim, R. Benjamin, M. Delaney, M. Streetly, S. Schey, C. Bygrave, S. Shah
Kings College Hospital, Guy's and St Thomas' Hospital, Cardiff University Hospital NHS Trust

INTRODUCTION

Multiple myeloma is the most common haematological malignancy and accounts for 1% of all cancers [1].

Induction chemotherapy with novel anti-myeloma agents followed by high dose melphalan autologous stem cell transplantation (ASCT) has led to significantly increased progression-free and overall survival in patients with MM [2].

Renal failure is a significant complication of MM and has a substantial impact on the mortality and morbidity of these patients [3].

Treatment options such as renal transplantation which may have not been offered previously in this patient group are now being such considered following achievement of a very good partial response (VGPR) or complete response (CR).

This case series reports the outcomes for patients after ASCT for MM and subsequent renal transplantation.

RESULTS

Three of the patients were male and 2 were female. The mean age at diagnosis of MM was **53 years** (range 37 to 64 years).

All patients identified were Caucasian. Median time of follow up was **67 months** (range 47 to 95 months).

After induction therapy with novel agent chemotherapy, high dose melphalan autografts for multiple myeloma were performed after a median of **11 months** (range 10 to 22 months), achieving VGPR or CR

80% of the patients identified presented with end stage renal disease (ESRD). Renal transplantation was performed at a median of **27 months** after ASCT (range 16 to 43 months). The median time from achieving CR to renal transplantation was **32 months**.

Patients **1** and **3** had relapse of their myeloma at **48** and **29** months post ASCT respectively (median 39 months) **6** and **13** months after renal transplantation (median 10 months). Both patients died in the follow up period.

DISCUSSION

Renal transplantation is known to improve survival compared to dialysis in renal patients both with and without hematological disease [4]. Therefore, for those patients who have achieved a VGPR or CR followed by ASCT, renal transplantation is an attractive option.

Dialysis independence offers a significant economic advantage as well as improving quality of life.

Concerns and uncertainty remain around several issues:

- **Optimum timing for renal transplantation after VGPR/CR and ASCT.** In our study, ASCT for MM were performed after a median of **13 months** (range 10 to 22 months) following diagnosis of MM and renal transplantation was performed at a median of **27 months** after ASCT (range 16 to 43 months).
- **Possible risk of immunosuppression in precipitating MM relapse.** Our data shows that the time to relapse of MM after ASCT is comparable to the mean time of relapse of MM after ASCT, reported by Al-Mansour et al, of 36 months [5] despite renal transplantation, thus implying that immunosuppression does not precipitate relapse of MM. Treatment of relapsed myeloma after renal transplantation remains challenging, however a number of promising novel anti-myeloma therapies are currently being evaluated.
- **Increased chance of sepsis.** Infections are the second most cause of death following renal transplantation due to long term immunosuppression [6]. Relapse of myeloma confers an additional risk due to immunoparesis and the subsequent chemotherapy. Clinical management of immunosuppression regimens to avoid sepsis and minimize the risk of renal transplant rejection is imperative.
- **Potential for renal graft dysfunction and loss as well as death with a functioning renal allograft in the event of myeloma relapse.** 40% of our patients died after a median of 73 months following diagnosis of MM. Both patients suffered from relapse of MM and had a subsequent decline in renal function.

METHODS

Five patients with MM and end stage renal disease (ESRD) who underwent renal transplantation were identified at **Kings College Hospital** and **Guy's and St Thomas' Hospital**.

Clinical information was documented from the medical records. Following the **diagnosis of MM**, data on **treatment administered**, **response to treatment** and **subsequent MM disease progression** and **renal transplantation outcome** were collected.

Figure 1: Graph to show decline in eGFR in Patient 1 post diagnosis MM with significant events marked

Figure 4: Graph to show decline in eGFR in Patient 4 post diagnosis MM with significant events marked

Figure 2: Graph to show decline in eGFR in Patient 2 post diagnosis MM with significant events marked

Figure 5: Graph to show decline in eGFR in Patient 5 post diagnosis MM with significant events marked

Figure 3: Graph to show decline in eGFR in Patient 3 post diagnosis MM with significant events marked

Figure 6: Graphical representation of timeline of progression of disease of each patient from time of diagnosis of MM

CONCLUSION

We report that patients with MM undergoing ASCT followed by renal transplantation achieve dialysis independence for a median of **66 months**.

Although the data is limited thus far, contemporary data as shown by this case series report can be used to guide clinicians when making decisions particularly regarding suitability for renal transplantation.

In our cohort of patients, **time to relapse of MM was not decreased despite immunosuppressive medications** after renal transplantation.

We suggest that **all patients with MM and end stage renal failure who achieve a stable deep response (VGPR or CR) for a minimum of a year following ASCT should be considered for renal transplantation.**