Kidney transplantation outcomes among patients with multiple myeloma – case series and long term follow up

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Introduction

- Multiple myeloma is one of the most common hematological malignancy in adulthood[1].
- Patients with MM and developed end stage kidney disease ((ESKD) has poor prognosis.
- In the French Renal Epidemiology and Information Network registry, median survival of patients with MM on dialysis was only 18.3 months, and only 2.3% of this cohort ever received a kidney transplant (KT)[2].
- Little is known about the outcomes of MM patients with ESKD and received KT in Canada.

Aim

a. To describe the clinical characteristics of patients with MM who have undergone KT.

b. To document the KT outcomes, including graft function, complications, rejection episodes if any, PFS and OS with regards to MM.

c. To identify unique challenges and treatment considerations in managing kidney transplant recipients with a history of MM.

Methodology

- We retrospectively reviewed the characteristics and outcomes of MM patients who underwent KT in our centre from 2010 to 2023.
- Adult patients who were diagnosed with MM before KT were included. Patients with diagnosis of MM after KT, diagnosis of AL amyloidosis or monoclonal gammopathy of renal significance without fulfilling diagnostic criteria of MM were excluded.
- Detailed documentation of demographic information, multiple myeloma diagnosis and treatment history, transplant-related data, and follow-up information were collected.
- Clinical nuances, including any modifications to immunosuppressive regimens and management of myeloma relapse. Response criteria and relapse criteria are defined by International Myeloma Working Group in 2016.
- Wait time to KT is calculated from autologous stem cell transplantation (ASCT) to KT and presented to the nearest month.

Results

Basic demographic and MM characteristics

- Median age of MM diagnosis was 55 (range 39-63) years old
- Patient #7 had high risk atypical cytogenetic pattern 17p, high risk deletion 4;14 while the other 7 were negative for high risk atypia.
- All patients were classified as international scoring system (ISS) stage III at diagnosis
- Table 1 demonstrates basic demographic and MM characteristics at diagnosis

MM treatment profile

- Treatment profile for all patients are illustrated in Figure 1.
- Patient #4 had complete remission (CR) after 5 cycles of CyBorD (cyclophosphamide, bortezomib, dexamethasone) followed by ASCT. However, MM relapsed at 13 months after ASCT, and he subsequently received lenalidomide-dexamethasone for 2 years with very good partial remission (VGPR) before KT.
- Before KT, patient #2 had superficial papillary bladder cancer 2 years after ASCT, while patient #3 had prostate cancer Gleason grade 6 diagnosed at 4 years after ASCT needing radiotherapy.
- Median wait time to KT after ASCT was 42 (range 28-64) months.

Results

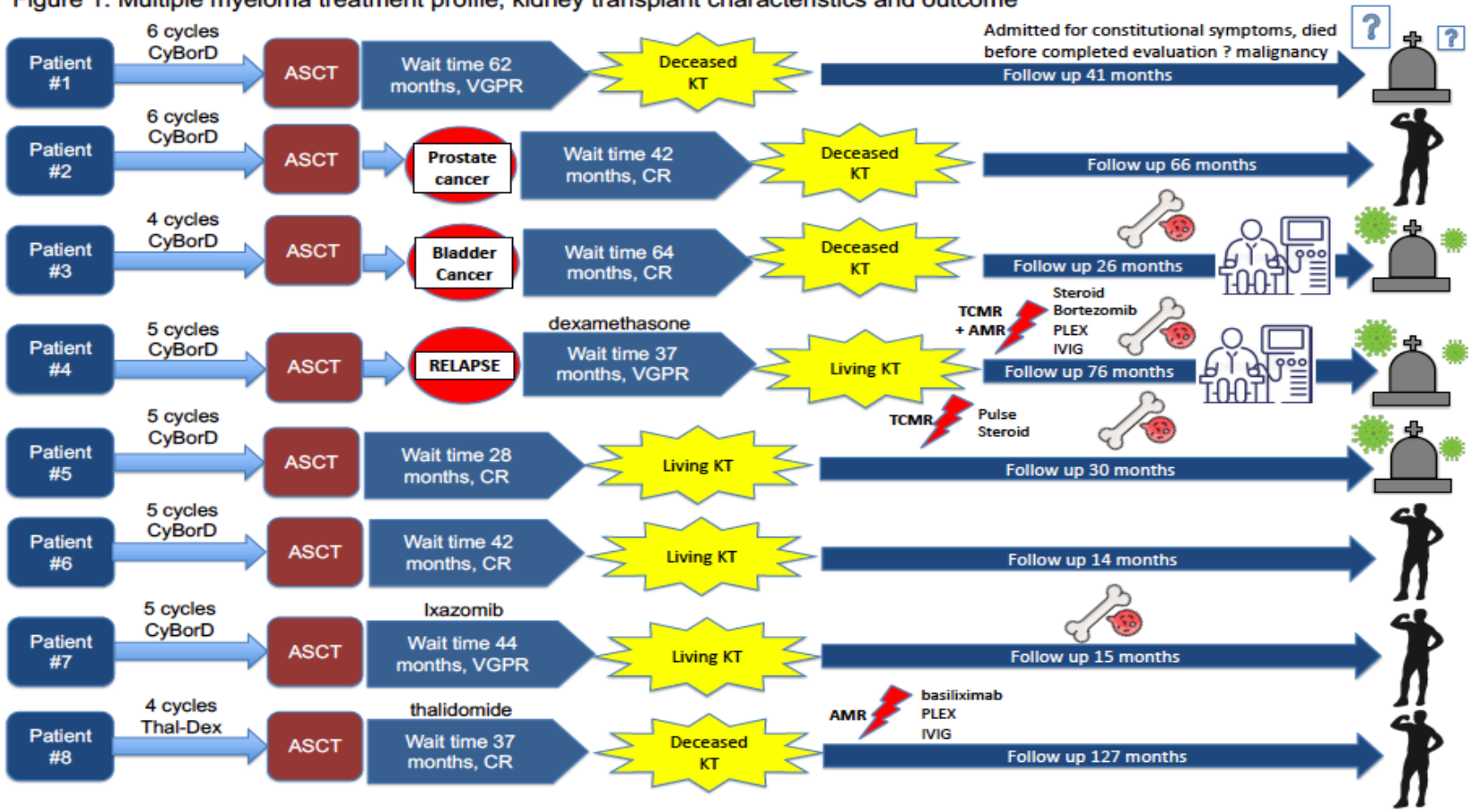
KT characteristics and outcomes

- 4/8 patients received living donation KT (1 of which was ABO incompatible (ABOi) KT).
- All patients received basiliximab as induction agent, with additional plasma exchange and IVIG as desensitisation for the patient who underwent ABOi KT.
- Median follow up after KT was 41 (range 14-127) months.
- Patient #4, #5, and #8 developed acute rejection at 25 months, 8 months and 2 months, respectively.
- Patients #3, #4, #5 and #7 had MM relapse at 6, 8, 17 and 26 months, respectively. 2 patients had graft loss. Patient #3 had allograft loss immediately at MM relapse and died. Patient #4 had allograft loss 64 months after MM relapse and died 5 months after graft loss.
- Patient #4 received lenalidomide and dexamethasone, followed by cyclophosphamide, carfilzomib, eventually to pomalidomide and finally ixatuximab before deemed progressive disease. Patient #5 received CyBorD but refractory, subsequently changed to lenalidomide without adequate control. Patient #7 received daratumumab and responded to treatment at last follow up.
- Death-censored graft survival at 1, 3 and 5 years after KT were 100%, 83%, and 83%, respectively.
- Overall survival at 1, 3 and 5 years after KT were 100%, 67% and 50%, respectively.

Table 1: Basic demographic profile and multiple myeloma manifestation at diagnosis

Patient number	Age, years/ gender	Light chain	Bone marrow plasma cell %	Kidney biopsy	Hypercalcemia	Bone lesion	Hemoglobin level, g/L	Beta 2 microglobulin	Dialysis initiation
#1	56/F	lambda	15	no	Yes	No	90	NA	4 months after ASCT
#2	42/M	Kappa	15	LCDD and ATN	No	Yes	85	1860	1 month after treatment
#3	61/M	Kappa	60	no	Yes	Yes	86	8	At MM diagnosis
#4	39/M	Lambda	70	AIN	No	Yes	70	930	21 months after ASCT
#5	55/F	Lambda	50	MCN	No	No	73	15.3	At MM diagnosis
#6	43/M	Kappa	15	LCDD	No	No	83	1327	6 months after ASCT
#7	63/M	Lambda	30	MCN	Yes	Yes	88	1002	At MM diagnosis
#8	61/M	Lambda	23	Undetermined nodular sclerosis	No	Yes	99	23.8	At start of treatment

Figure 1: Multiple myeloma treatment profile, kidney transplant characteristics and outcome



Legend

acute rejection | MM relapse | graft loss | death from infection | alive | uncertain cause of death

Conclusion

- Early MM relapse after KT is common.
- Patients who developed MM relapse had significant risk of graft loss and death.

References

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