Effect of first autologous stem cell transplant in myeloma patients with renal failure: a retrospective analysis

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Autologous stem cell transplantation (ASCT) has significantly improved the outcome and overall survival rates of patients with multiple myeloma (MM). However, co-morbidities such as renal impairment can limit its application. Renal failure is a significant complication of MM affecting approximately 30% of newly diagnosed patients with MM and is associated with reduced survival. Although renal failure is not a contraindication to ASCT, it remains unclear what is the impact of renal function on ASCT, whether ACST is a safe procedure with impaired renal function and if so, whether it can be used as a mean to improve reduced renal function in patients with MM.

In order to address these questions, we conducted a retrospective analysis of 370 patients who underwent ASCT for MM over a 7-year period. The median age of the patients was 60 years (range,32-74). The patients received induction chemotherapy regime (81% received 1 line, 19% received 1 lines), followed by high-dose melphalan ASCT. The dose of melphalan was reduced to 140mg/m2 in patients with eGFR50ml/min. To evaluate the impact of ASCT on renal response, the patients were divided in four groups based on the estimated glomerular filtration rate (eGFR) pre-transplant, as follows: Group A:eGFR 90ml/min (37%), Group B:eGFR 60-89ml/min (45%), Group C:30-59 ml/min (12%) and Group D :30ml/min (6%). Ten patients were on haemodialysis and one on peritoneal.

Paired analysis of eGFR revealed a statistically significant improvement of eGFR between day 0 and one year post-transplant (p=0.04). Although an improvement in eGFR was also observed at day 100, this was not significant. Analysis of the different eGFR groups, revealed that 4/23 patients improved their eGFR category from Group D to Group C and 15/35 from Group C to Group B at day 100 and 7/21 and 13/32, respectively, at one year. Of the 11 patients on dialysis at the transplant, 8 became dialysis independent later. This included 3/11 following autograft and a further 5/11 patients who were able to undergo renal transplant. In contrast, 1/21 patients dropped category from Group C to Group D at day 100 and 1/20 at one year. Importantly no patients in group C or D had a deterioration of renal function that required dialysis. ASCT was well. ASCT was well tolerated with no statistically significant difference in TRM (p=0.3). Neither the overall survival nor the progression-free survival at 5 years were impacted by renal function at transplant (p=0.9 and p=0.56, respectively). There were no deaths in the first 6 months in the Group D patients. Notably, a decline of renal function at one year was associated with a poorer overall survival (p0.001).

Overall our data suggest that ASCT is a safe option for myeloma patients with renal impairment confirming that ASCT is not precluded in patients with advanced renal impairment. We have also confirmed that a significant proportion of patients with advanced renal failure including those requiring dialysis have improvements in renal function as a result of transplant with a likely resultant improvement in both quality and quantity of life.