**Pre-emptive Haemodialysis Post-Melphalan for Patients with Renal Impairment receiving Autologous Stem Cell Transplant for Multiple Myeloma.**

Background: High dose melphalan is used as conditioning regimen for autologous stem cell transplant (SCT) and despite limited pharmacokinetic data on clearance of melphalan (1-3), several small studies have shown higher treatment-related toxicities and mortality than patients with mild renal impairment or normal renal function (4-5). The authors have indeed noted this in clinical practice. In this abstract we report our experience of implementing a protocol for autologous (SCT) that that includes performing haemodialysis post-melphalan (140mg/m2) in patients with renal impairment.

Method: Patients with multiple myeloma who had an estimated Glomerular Filtration Rate (eGFR) less than 20mls/min had a short 1.5-hour session of haemodialysis the day before melphalan therapy and 2 further 2-hour sessions on Day +1 and Day +2 following melphalan therapy. Further dialysis sessions were determined daily by a Nephrologist depending on electrolyte disturbances or fluid balance. Patients with mild to moderate renal dysfunction (eGFR 20-30, eGFR 30-60, eGFR >60) were managed on an individual basis with regular input from a Nephrologist. Patients receiving doses of melphalan higher than 140mg/m2 and SCT for diagnoses other than multiple myeloma were excluded.

Findings: From 2009 to 2017, a total of 23 patients were identified to have had a SCT and were at risk of renal impairment (either eGFR <60 or eGFR >60 with known renal involvement of myeloma. These patients were divided into groups based on eGFR and whether or not they were dialysed post-melphalan. 14 patients received dialysis post-melphalan based on a standard protocol. Of the 14 patients, 8 were haemodialysis-dependent, 4 patients had eGFR<20, 1 patient had eGFR 20-30 and 1 patient had eGFR 30-60.

Of the patients with eGFR <20, there was no difference between the 90 day or 1 year survival between patients who received dialysis and those who didn’t. All patients with eGFR <20 who were not dialysis-dependant pre-transplant maintained independent renal function. 2 of the 4 dialysed patients had a relapse of myeloma at 3 months and 5 years.

Six of the 23 patients died over the course of 12 years. Transplant-related mortality (TRM) was 0.05% and included one patient with eGFR >60 who went on to require haemodialysis as a consequence of acute kidney injury post-SCT. The mortality for the haemodialysis group receiving autologous SCT was no higher than mortality for all dialysis patients (6) Median duration of hospital stay was shorter in those with eGFR >20 who received dialysis in comparison to the same group who didn’t (22 days vs 25 days respectively). Dialysis dependent patients had a median hospital stay of 69.5 days (range 22 – 117) with a mean stay of 37.8 days.

Conclusion: Melphalan 140mg/m2 with autologous SCT is safe and effective in patients with renal impairment. Our data concludes that there is no increased mortality associated with pre-emptively dialysing patients with eGFR of less than 20mls/min. Further larger multi-centre studies are required to evaluate the role of haemodialysis post-melphalan to assess effect on patient outcomes.

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