**S-H-3**

**A COMPARISON OF TBI AND NON-TBI CONDITIONING REGIMENS IN PATIENTS UNDERGOING MATCHED-UNRELATED BONE MARROW TRANSPLANTATION**

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Allogeneic bone marrow transplantation (Allo-BMT) has been widely used for the treatment of haematological malignancies. In patients without HLA-matched siblings, BMT from matched-unrelated donors (MUD) becomes an alternative choice. Total body irradiation (TBI) is used conventionally in MUD BMT conditioning but it is associated with severe side effects. In allog-BMT conditioning, busulfan-cyclophosphamide (Bu-Cy) was shown to be as effective as Cy-TBI. In MUD BMT, however, there has been concern that the use of Bu-Cy may increase the risk of graft rejection. The present study investigated the effects of Bu-Cy conditioning on the outcome of patients undergoing MUD BMT. Since December 1998, 8 patients (CML=5; AML=3) underwent MUD BMT using busulfan (16 mg/kg) and cyclophosphamide (150 mg/kg) as conditioning. (Mean age 32.8±3.3). As historical control, the outcomes of 28 patients (CML=16; AML=7; Biphenotypic acute leukaemia=2; ALL=2; MDS=1) who underwent MUD BMT using TBI containing regimen [Bu (7 mg/kg)-Cy (50mg/kg)-TBI (12Gy) = 18; Cy (120mg/kg)-TBI (12Gy) = 10] since 1992 (Mean age 29.3±1.7) were also analyzed. All patients received standard GVHD and anti-microbial prophylaxis. The average no. of days requiring TPN (as a result of oral mucositis) was significantly lower in the Bu-Cy group (18±3.6 days) compared with the control (31.9±4.1 days, Mann-Whitney U Test p<0.05). There were no differences in neutrophil (ANC > 0.5 x 10⁹/L) and platelet (>25 x 10⁹/L without transfusion) engraftments between the 2 groups. The Bu-Cy group had less veno-occlusive disease (VOD) (2/8 vs 11/28 in control) but more haemorrhagic cystitis (HC) (3/8 vs 5/28 in control) though the differences were not significant (Chi-Sq Test p>0.05). Patients in the Bu-Cy group also had a significantly lower occurrence (1/8) of severe GVHD (Overall grade >=2) than the control group (18/28) (Chi-Sq Test p<0.05). Transplant-related mortality (TRM) within 100 days after BMT was 0 in the Bu-Cy group but was 7 (out of 28) in the control (GVHD related = 4; Regimen-related toxicity = 2; Graft failure = 1). The difference, however, did not reach statistical significance (Chi-Sq Test p>0.05). There was no difference in the occurrence of early graft failure in both groups of patients (1/8 in the Bu-Cy group vs 3/28 in the control). In conclusion, we have shown that the use of Bu-Cy during conditioning in MUD BMT had no adverse effect on neutrophil and platelet engraftments and did not increase the occurrence of graft failure. On the other hand, the use of TBI-containing regimen in marrow conditioning was associated with increased severity of oral mucositis and increased risk of VOD and severe GVHD and a higher transplant-related mortality.