

ID: 124

Area Clinica

Poster

Parole chiave: Infant Donors, Thalassaemia Major, Sickle Cell Anaemia, Bone Marrow Transplant

INFANT DONORS OF ALLOGENEIC BONE MARROW FOR PATIENTS AFFECTED BY BETA-THALASSAEMIA MAJOR OR SICKLE CELL ANAEMIA : SAFETY AND EFFICACY OF GRAFT PRODUCT

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To candidate infants as bone marrow donors raises two main concerns: donor safety and adequate marrow cell dose.

We report the experience of 38 infant donors compared to 194 young donors underwent a single bone marrow harvesting procedure. The weights of infant donors were significantly lower than the ones of the young donors (median 12.26 vs 45.47 Kg, $p < 0.000$) and consequently the recipients received a median of bone marrow volume which was significantly smaller compared with young donors (median per Kg recipient weight 14,1mL/kg vs 24.4 mL/Kg; $p > 0.001$). A large unfavorable weight discrepancy between donors and recipients was documented in 89.5% of the infants as compared with 17% of the young group ($P = 0.000$). Nevertheless, no difference was documented in terms of CD34+ cells infused in the recipients of the two donor groups (median yield per Kg recipient weight of CD34+ cells, $8,9 \times 10^6/\text{kg}$ vs $7.5 \times 10^6/\text{kg}$ respectively; $P < 0.001$) resulting in successful engraftment and regular haematological recovery. This was driven by higher absolute CD34+ cell yield in the infant graft as compare to the young's ones (median yield of CD34+ cells $\times 10^6/\text{ml}$ Bone Marrow, $0.66 \times 10^6/\text{ml}$ vs $0.33 \times 10^6/\text{ml}$ respectively; $P < 0.001$).

No major adverse events or life-threatening complications occurred during the donation procedure. However, due to the infants'ineligibility to collect autologous blood unit, the risk to receive red cell transfusion was significantly greater in infants compared to young donors (OR 6.5, 95% CI 3.8-13.7).

Our experience shows that a single marrow harvesting procedure in infant donors is feasible, safe and effective. The infant age appeared to be associated with an increased number of absolute CD34+ cells which encourages the eligibility of the infants as bone marrow donors and balances the frequent body weight discrepancy documented between infant donors and respective recipients. The our safety policy of exposing infant donors to one single bone marrow harvesting, irrespective of the recipient body weight, challenges the practice of carrying out the bone marrow donation two or three times. It should always be anticipated that marrow donation in infant age could be associated with a risk of red cell transfusions