

Double cord blood grafting with one graft injected in situ via the intrabone route to improve engraftment of umbilical cord blood transplant.

Abstract: Unrelated umbilical cord blood (CB) transplantation gives comparable results to those of unrelated bone marrow (BM) transplantation. Comparisons made by many authors between those two sources of cells demonstrated that in cases of adult or paediatric acute leukaemias, long-term overall survival was comparable. (1, 2) For the two sources, the main risk factors are patient age and disease status at the time of transplant. However, differences between those two types of grafts exist: CB transplants are all HLA incompatible whereas BM grafts are selected on the basis of allelic HLA identity; the number of injected CD34+ cells in a CB unit is 10 times lower than that found in a BM harvest. Compared to BM transplants, CB transplants engraft more slowly even though they are enriched with the most immature cells. This leads to an increase in early infectious complications and transfusion needs; however, acute and chronic graft-versus-host disease reactions are decreased. In the long term, immune and haematological reconstitutions are better in CB transplants, leukaemia relapse rates are apparently identical, which explains why survival after CB or BM transplant is comparable. We can then hypothesize that an improvement in early engraftment should decrease initial toxicity and improve survival, more importantly in the adult patient where the number of cells in a CB unit is the limiting factor for doing a CB transplant.

In order to address this issue, we propose:

1. To treat patients aged 10 to 50 y-old with indications for an unrelated allogeneic transplant
2. To use two umbilical cord blood units: the first one will be injected directly inside the bone and the second one intravenously
3. To follow chimerism to determine the best way of administering the graft.