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Autologous cord blood transplantation

Placental blood transplantation has been used to restore bone marrow function after intensification chemotherapy for hematological malignancies and other tumors.[1–3] When it was demonstrated that cord blood could be stored for later use, some commercial providers suggested storing cord blood as a form of insurance and tried to sell the idea that should the child develop a cancer some day the placental blood stored would be useful and perhaps lifesaving. There are no risk/benefit studies that can or cannot justify this procedure. Some recent findings showing that leukemic blood cells are present in fetal and neonatal blood of patients diagnosed with leukemia at 10 years are a strong argument against 'insurance storage', at least for future use in future leukemias.[4]

We have an active program of placental blood transfusion and we discussed offering 'insurance storage' to concerned parents. We decided not to, prior to the demonstration that leukemic cells could be present in placental blood. Recently, however, we performed what appears to be the first autologous placental blood transplant, not having found any report of similar cases after literature review.

Five years previously, we had treated a 5-year-old boy for AML. He achieved complete remission and was consolidated with an autologous bone marrow transplant, did well but relapsed 1 year after hematological recovery. He again entered remission with a salvage regimen involving high-dose cytosine arabinoside and 2-CDA and underwent a second autologous bone marrow transplant. During the neutropenic phase he developed a major infection with *Aspergillus niger* in his hard palate, which perforated. He entered full remission over 2 months, received interleukin-2 in the post-transplant period, had surgery to correct the perforation and is doing very well in complete continuous remission. We discussed with his parents his chances of maintaining remission after the second transplant when he was recovering from his Aspergillus infection, and considered these not very promising. The parents decided to have another child in the hopes of having one HLA identical with the boy and they had an HLA identical girl. Placental blood was stored when she was born. When she was 1 year 2 months old she developed a stage IV neuroblastoma. She entered complete remission with etoposide, carboplatin and cyclophosphamide. The prognosis of stage IV neuroblastoma is dismal with conventional treatment, with very few long-term remissions, and as her brother had been in remission from his disease for some time and there was a chance, in his case, of a possible long-term complete continuous remission, we decided to carry out an autologous placental blood transplant on the girl. She was conditioned with TBI and high-dose melphalan,[5] did very well and is now in complete remission from her disease, 14 months post transplant, with a normal blood count and a Karnovsky score of 100%.

There are ethical concerns about storing placental blood for personal use. We agree with Gluckman when she states that 'blood and organs are freely donated and there is an implicit agreement within the health care community that they should not be used for profit'.[6,7] New knowledge about the presence of malignant cells in placental blood, years before clinical disease would argue against 'insurance storage'. On the other hand, our case could be used as a strong argument for autologous placental blood storage, and complex ethical questions could be posed. Is it the right of parents, if they can pay for it, to provide placental blood storage for their children? The risk/benefit analysis suggests that storage is not useful when populations are considered, but in individual cases should the parents have the right to decide they want this type of service? We wish to discuss these ethical questions with our colleagues in the bone marrow transplantation community: we feel this is an appropriate forum for discussions, which should be carried out before regulatory agencies with no expertise in the field impose guidelines.

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