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Umbilical cord blood transfusion: A new therapeutic tool in modern haematology: In using fetal cell in adult disease

There are about 100 million births in the world annually at a conservative estimate. In India, there are over 20 million births per annum, which means that over 20 million placentas are discarded every year as waste. One of the products of the placenta is cord blood; it has immense potentials. An estimated 8,785,000 Litres of cord blood is produced globally per year if an average of 84-90 ml/placenta collection is assumed. Our group of medical scientists and clinicians transfused ABO screened and HLA matched randomized fetal blood in cases of anemia resulting from malaria, diabetes, thalassemia, leprosy, rheumatoid arthritis, tuberculosis, malignancy, AIDS, and found it not only to be safe but perhaps providing additional benefits that need further study. In parts of the world where research is ongoing, a microscopic section of cord blood's mononuclear cells (0.01% nucleated cells) is used for transplantation purposes, while the rest, i.e., 99.99%

is discarded. But the discarded part has many potential uses. Cord blood is free from infection, hypoantigenic in nature, has an altered metabolic profile, is enriched with growth factors and cytokine filled plasma and has a potentially higher oxygen carrying capacity than adult blood. The blood volume of a fetus at term is around 80-85 ml/kg. The placental vessel at term contains approximately 150 ml of cord blood. Cord blood contains three types of hemoglobin, HbF (major fraction), HbA (15-40%) and HbA2 (trace amounts). HbF, which is the major component, has a greater oxygen binding affinity than HbA. Our group of medical scientists and clinicians conducted over 1260 cord blood transfusions with safe outcomes in all cases, as indicated in our published studies, from 1999 till date (follow-up) in children and adults for various indications. Not a single case of immediate or delayed immunological or non immunological reaction was reported.

Biography

Niranjan Bhattacharya holds a MD in Obstetrics and Gynaecology, MS in General Surgery and a DSC in Developmental Immunology. His principal specializations are cell and tissue therapy. Has presented invited lectures in several international universities and institutions. Has published widely in international and national journals on cord blood and regenerative medicine; is the co-editor of five books on the subject published by Springer. Currently, Chair Professor and Head of the Department, Regenerative Medicine and Translational Science, and Director General, first Public Cord Blood Bank in India, Calcutta School of Tropical Medicine, Kolkata. Cited among top five global cord blood influencers by BioInformant.

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