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Placental umbilical cord blood transfusion in transfusion-dependent beta thalassemic patients

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The term blood substitute is actually a misnomer because only a part of the total functions of the blood is replaced by any available so-called substitute, i.e., oxygen delivery and volume expansion only. Therefore, a more accurate term should be red cell substitute. Cord blood, because of its rich mix of fetal and adult hemoglobin, high platelet and WBC counts, and a plasma filled with cytokine and growth factors, as well as its hypoantigenic nature and altered metabolic profile, has all the potential of a real and safe alternative to adult blood during emergencies due to any etiology of blood loss and anemia. Our experience of 192 units of cord blood transfusion in patients with beta thalassemia with severe anemia (hemoglobin concentration varying from 3.5 to 6 g/dl with mean hemoglobin 4.67g/dl) proved to be extremely effective in 84 patients as an emergency substitute of adult conc RBC transfusion (male: female ratio 1:1, age varying from 6 months to 38 years). In the present series, the collection of the blood varied from 57 ml-136 ml mean 84 ml +/- 7.2 ml SD, median 87 ml, mean packed cell volume 45 +/- 3.1 SD, mean

hemoglobin concentration 16.4 g/dl +/- 1.6 g/dl SD. After collection the blood was immediately preserved in the refrigerator and transfused within 72 hours of collection from the consenting mother undergoing lower uterine cesarean section. We did not encounter a single case of immunological or non immunological reaction till date. We suggest that the medical fraternity use this precious gift of nature, which is free from infection, hypoantigenic with an altered metabolic profile, filled with growth factor and cytokine filled plasma with potential higher oxygen carrying capacity than for adult blood, as an emergency source of blood for the management of transfusion-dependent beta thalassemics. Actually the clinicians use hydroxyurea in case of Beta thalassaemics to boost the Fetal haemoglobin concentration. In resource restricted world Elisa method is used for detection of transferable virus which is not fault free but PCR screening for the same increases the cost of screening disproportionately. Here the most formidable structural and functional screening by nature, i.e, Placenta is a true advantage.

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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