

Joint Event

Hematology, Immunology & Traditional Medicine

December 05-06, 2018 | Lisbon, Portugal

Fetal cell in adult: A study and follow-up of placental umbilical cord whole blood transfusion in anemia from pediatric to geriatric group since 1999

Niranjan Bhattacharya

Calcutta School of Tropical Medicine, India

While some partial substitutes for blood for human transfusion that has been suggested over the years, no true alternative for adult human blood has been found. Our group of medical scientists in Calcutta (Kolkata), India, has been working on cord blood as a true alternative for adult blood transfusion since 1999. This group of scientists and clinicians has 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. No case of visible graft vs. host reaction, immediate or delayed, or any other immunological or non-immunological reaction, has been noticed in any of the recipients so far from 1999 till date. This is an important discovery since over 100 million births take place annually with in India alone accounting for 20 million, and till recently, all placentas, the richest source of cord blood, which can serve as a true alternative to adult blood for transfusion needs, have been discarded. Our group has conducted over 1260 cord blood transfusions and follow-up in consenting volunteers with anemia (Hemoglobin less than 8 gm/100 ml from 1999 till date) including children and adults, in various indications of transfusion, and can ascertain the safety of ABO and HLA matched and screened cord blood in human transfusion. Cord blood is practically free from infection due to the structural or functional integrity of the placental barrier up to 34-35 weeks. It has many other advantages which may also help patient recovery. It is intrinsically hypo-antigenic in nature, has an altered metabolic profile and is enriched with growth factors and inflammatory and non-inflammatory cytokine filled plasma. It contains 60-70 percent fetal hemoglobin which has the potential to carry at least 60 percent more oxygen than adult blood and its use can be extremely beneficial in case of attempted revival after cardiac arrest or combating myocardial infarction or cerebrovascular thromboembolic sudden disorder to prevent rapid deterioration of neuronal function. 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. The blood volume of a fetus at term is around 80-85 ml/kg. In cutting edge medical research, cord blood stem cells alone have been separated from the placental blood and used for transplantation, but stem cells form only 0.01 percent of the nucleated cells. The rest of the cord blood, i.e., 99.99 percent, has long been considered useless and discarded. We suggest that umbilical cord whole blood (including the stem cells), can be transfused (which is different from stem cell transplantation) in adults with potentially better effects, given its higher hemoglobin content and subsequently, higher oxygen carrying capacity and the additional advantages which has helped the fetus to grow in the first place like cytokine filled plasma and growth factors.

Notes: