

Placental Umbilical Cord Whole Blood Transfusion in an Emergency When the Hemoglobin Concentration Is Less Than 8gm Percent in Pediatric to the Geriatric Age Group From 1999

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Abstract: We conducted over 1260 cord blood transfusions in consented volunteers with anemic (Hemoglobin less than 8gm/100ml) from 1999 till date in children and adults for various indications of transfusion-caused by Cancer to Malaria, Leprosy, HIV, Rheumatoid arthritis, Tuberculosis, Thalassaemia only to name a few. Not a single case of immediate or delayed graft vs host or other immunological or nonimmunological reaction was noted in any of the patients. Stem cells (0.01% nucleated cells) is used for stem cell transplantation purposes only, while the rest, i.e., 99.99% is discarded. But the discarded part has many potential uses in resource-restricted countries for transfusion purposes, after due screening for the transfusion-transmitted diseases like HIV (1&2) or Hepatitis B/C etc. Cord blood is practically unfastened from infection because of the structural or functional integrity of the placental barrier up to 34-35 weeks. This makes the fetal blood practically free from infection other than its intrinsic hypo antigenicity in nature, an altered metabolic profile and, is enriched with growth factors and inflammatory and noninflammatory cytokine stuffed plasma. This blood with 60-70 percentage fetal hemoglobin content which has the potentiality to carry as a minimum 60 percent extra oxygen than grownup and its use can be extremely beneficial in case of tried revival after cardiac arrest. The placental vessel at time period contains approximately 150ml of twine blood. Cord blood carries three types of hemoglobin, HbF (important fraction), HbA (15-40%) and HbA2 (hint amounts). HbF, that's the primary component, has a greater oxygen binding affinity than HbA. The blood volume of a fetus at time period is around 80-85ml/kg.

Introduction: The role of the blood and its components is increasing every day in the allopathic medicine, no longer handiest because of its requirement in accidents,

surgeries, and anemia cases however also it has a therapeutic price in such a lot of illnesses. Till date, there has been no whole opportunity for human blood. What so ever on trial as substitutes for blood aren't satisfying the favored parameters? As a long way as artificial blood is concerned, no truthfully secure and efficient artificial blood product is currently marketed. Umbilical wire blood is rich in fetal haemo-additives and hence can be a perfect and elective source for each autologous and allogenic blood transfusion in new conceived babies.

Materials and Methods: UCB was collected in CPD luggage of 100 ml capacity (HLL Life-care Limited) with all aseptic precautions from normal healthful deliveries performed in Labor Room. Blood grouping and Rh typing, TTIs popularity of blood unit and, DCT (Direct Coombs Test) and ICT (Indirect Coombs Test) of blood had been completed in blood bank. ABO and Rh blood grouping, DCT and ICT of the UCB sample was completed by way of the usage of traditional tube methods and gel technology (column agglutination; Tulip Diagnostics). TTIs check of UCB gadgets was finished via way of Elisa Method using Elisa reader. Along with series of UCB, out of 250 times, in 100 times we were capable to acquire 3ml blood from the wire one at a time in EDTA vial for whole haemogram. Complete haemogram was carried out on 5-part haematology analyser.

Blood devices healthy for transfusion, after cross suit were transfused to pre-registered patients for the study. Patients had been registered either on request of clinicians who had an opinion that their patients could be benefited with the aid of the transfusion of UCB or to those patients who have been inclined to have UCB transfusion as a prospective treatment for their illness.

Discussion: Most researches and clinical activities regarding to UCB have restrained as an awful lot as autologous UCB transfusion in preterm neonates and application of UCB stem cells in bone marrow transplants.

Transfusion of UCB as a remedy for various illnesses has now not been notably studied. Use of UCB to ameliorate signs and symptoms in malignancies, autoimmune disorders, anaemia, geriatric issues and leprosy have been suggested in few studies, and did not monitor any damaging occasion because of UCB transfusion.

Status of UCB as a safe opportunity to whole human man or woman blood is further strengthened by the consequences of our examine, in which 0.4% (handiest one case) of FNHTR became reported, a most often encountered negative occasion of blood transfusion.

Variability has been located in reporting the haematological parameters of UCB in severa studies. Agrawal N in her examine of "Transfusion of Placental Umbilical Cord Whole Blood (Rich in Stem Cells) in Transfusion Dependent Patients and to Assess Its Outcome. Despite the comparable values of haemoglobin in UCB with character complete blood in our observe, it has been discovered to be powerful in thalassemia patients due to the presence of fetal haemoglobin in UCB.

Due to growing geriatric population everywhere in the international and an arising want for introduction of regenerative medicine, more recent modalities are being investigated for a centered approach. Old age is marked with loss of renewal of stem cell niche in body which in turn influences the tissue repair. Therefore, stem cell remedy has got up as ability applicants for regenerative medicine. Cord blood is richer in stem cells constituting 0.01% of mobile populace in comparison to man or woman peripheral blood which has 0.001% of stem cells.

Conclusion: This precious human cord blood i.e. 2.45 lakh liter/ day, if not utilised, is a clinical waste; so, it isn't wise to waste the valuable human cord blood. Umbilical twine blood is secure and right opportunity of person blood. It is effective in the remedy of degenerative and autoimmune illnesses. UCB is additionally beneficial in neonates (an awful lot less quantity of blood is required), chronically transfused patients and a desire for geriatric persons. By our study and previous studies, its miles concluded that there can be no risk of graft versus host disease through UCB transfusion. Here, we are recommending that it should no longer be discarded as medical waste and utilised judiciously inside the hobby of human nicely being.