

Umbilical Cord Blood Transplant- Are We Doing Enough?

Keywords: Stem Cell transplant, Umbilical Cord Blood banking; Lymphoma; Pediatric population; Allogenic

Abbreviations: UCB: Umbilical Cord Blood; UCBT: Umbilical Cord Blood Transplant; HLA: Human Leukocyte Antigen; BM: Bone Marrow; PB: Peripheral Blood; GVHD: Graft Versus Host Disease; GVL: Graft Versus Leukemia

Introduction

Umbilical Cord Blood (UCB) Transplant (UCBT)-a treatment made popular in 1988 when the first successful pediatric transplant was performed in Paris with the cells procured from an allogeneic related source [1]. It is now established as a robust alternative when a Human leukocyte antigen (HLA) matched bone marrow (BM) or peripheral blood (PB) donor is unavailable [2]. The prime advantage offered by the biologically naïve cells of UCB is the ability to breach the HLA barrier-to be able to perform transplants with partially HLA-mismatched donors, with acceptable levels of Graft versus host disease (GVHD) and preserved Graft Versus Leukemia (GVL) effect [1]. It is as well postulated that UCB derived stem cells possess an extensive engrafting capacity which exceeds that of BM [3]. This advantage is now extended to adults with superior engraftment and survival owing to double unit UCBT, [3,4] improved patient selection, and better supportive care [3].

As the field of UCBT expanded exponentially a parallel evolution was seen in the system of cord blood banking. There are at least 142 public and 25 private UCB banks the world over with 3 public and 7 private banks located in India [4]. The private banks store approximately 900,000 UCB units as compared to a mere 400,000 units available in the public banks [5], highlighting a great divide. The futility of storage of UCB for autologous use is well recognized by the medical fraternity bringing it much obloquy. Currently, the indications for autologous UCBT in the pediatric populations are limited to recurrent lymphoma, solid tumors such as neuroblastoma and severe aplastic anemia [6]. The utility of autologous UCBT in the pediatric population is extremely low at 1-3 per million children as is the estimated risk of developing the few indications requiring autologous UCBT in children which is pegged at less than 1 in 50,000 [6].

The usage of UCB is limited, almost exclusively to allogeneic UCBT in the treatment of various malignant and non malignant hematological disorders [6]. Despite a large number of donors registered with various registries across the world [1,3] and many UCB units available in the public banks worldwide, potential transplant recipients in India are unable to find a suitable match in a timely fashion. UCBT in India have been scarce owing to limited availability of UCB units, approximately 5000; [4] in the public domain. The estimated requirement of this genetically diverse population is pegged at 30,000 units [4]. There is a large unmet requirement in India for UCBT despite a high and increasing burden of hematological disorders treatable by UCB. This gives

Letter to Editor

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rise to an exorbitant need to make available to the people in India, a large pool of UCB units for allogeneic use at affordable costs.

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