



Editorial

Here comes the cord

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Hematopoietic stem cell transplantation has been established as a lifesaving therapy for leukemias or other hematopoietic malignancies since more than a half century ago [1]. Human leukocyte antigen (HLA)-matched sibling is the preferred donor for the better clinical outcomes, while, even patients without suitable family donor could also receive the benefits from unrelated donor registries or cord blood (CB) banks. International collaboration has also been well-improved in this field. Nowadays, almost all patients who need allogeneic transplantation are able to find adequate donors.

Advantages to use CB unit are the quick availability, lower risk of severe graft-versus-host disease (GVHD) even though HLA between recipients and CB grafts is mismatched in most cases, and no risk for CB donors medically and mentally. Since the first patient received the CB from his HLA-matched sister to treat Fanconi Anemia successfully in 1988 [2], many CB banks have been established and the numbers of transplants using unrelated CB units dramatically increased. There are approximately 621,000 CB units in the database of Bone Marrow Donors Worldwide (BMDW: <http://www.bmdw.org/>). Recently, more than 3,000 CB transplantation (CBT)s are carried out annually all over the world: one third in Europe, one third in North America and another one third in Asia (mostly in Japan). Pediatric patients were major users in early period, however, CBT are gradually adopted in adults in this decade. For example, we are performing more than 1,200 transplantations using single CB unit annually in Japan, and

more than 80% are adult patients with hematology malignancies, and a half of the recipients are older than 50 years. The major reason of this increment in the world is the improved clinical outcomes. Recently, for example, Eapen and colleagues [3] compared results of 165 single CBT for adult patients, 888 peripheral blood stem cell transplant (PBSCT) patients, and 472 bone marrow transplant (BMT) patients. Transplant-related mortality was higher for the CBT patients, but chronic GVHD were lower. Leukemia-free survival was comparable among CBT, fully matched, and mismatched PBSCT/BMT patients [3]. These findings have contributed to increase the CBT activity among the international transplant societies and have gradually improved the reliability of this transplant strategy.

There is still limitation in CBT such as delayed engraftment and poor immune cell reconstitution [4]. The quality assurance of CB unit is also key issue for the reliability of CBT among the patients, their families, and transplant physicians. Cell dose is the most significant parameters for engraftment capacity of CB unit and also for survival results after CBT. Especially, CD34-positive cell number indicates the hematopoietic stem or progenitor cell function. However, the diversity of technical difference between CB banks has been evoked and it is necessary that we adjust that standard. Efforts are being intensified by the Foundation for the Accreditation of Cellular Therapy and the Joint Accreditation Committee - International Society for Cellular Therapy and European Group for Blood and Marrow Transplantation (FACT-JACIE), the American Association

of Blood Banks (AABB), and CB banks all over the world. Because the importance of cell dose is critical, researchers are focusing on CB expansion strategies and some of them are under laboratory and clinical assessment.

Under the situation described as above, CBT is definitely contributing to improving the life prognosis of patients with hematological malignancies. On the other hand, the utilized percentage of donated CB units all over the world is 6.3% reported by World Marrow Donor Association (WMDA), however it was reported as 1.2% in Korea. In this issue of **Blood Research**, Choi *et al.* [5] has analyzed the reasons by the questionnaire survey using “Audience Response System” for 67 board-certified transplant physicians at the annual meeting of the Korean Society of Blood and Marrow Transplantation. According to ordinary expectations, Korean physicians are now not positive for choose CB units as stem cell source for transplantation, because of the fears for poor clinical results and for unsatisfied quality of CB units from domestic CB banks. However, some Korean transplant specialists and CB bank persons have continued to proceed with great efforts for achieving the satisfied clinical outcomes with CBT and for obtaining good enough quality of CB units. They have already known the education is also important to improve the reliabilities for the strategy.

Please just remember the time when you started BMT or PBSCT, or even transplant with haplo just a couple of years ago. Nothing gains without going forward. Here comes the time of CBT.

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