

Curative cord blood hematopoietic stem cell transplantation (CBT) for HIV infection and thalassemia major (Thal)

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Abstract: Unrelated donor CBT (UCBT) is a proven therapy, saving thousands of lives yearly. Of UCBT's many curative indications, Thal and HIV infections have unique considerations.

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Thalassemia currently requires routine transfusion and iron chelation, which present quality of life, compliance and financial issues for most patients. Hematopoietic cell transplantation (HCT) is the only curative therapy for Thal, often performed with sibling grafts; however, only ~30% of the patients can find a suitable related donor. Requiring relaxed HLA matching, UCBT has the potential to expand the use of HCT for Thal. Transplant related mortality (TRM) of UCBT for Thal has been high in previous series. As the critical determinant with UCBT is nucleated cell dose (NC), strategies have been developed to maximize NC and optimize outcome [1,2]. When certain strategies are combined, superior survival and low TRM have been reported in the largest series of UCBT for Thal. Besides NC, the Chow group found HLA match, Pesaro class and center experience to be important [3].

For UCBT of HIV, the considerations are different. The first documented cure of an HIV patient is the "Berlin Patient", who received a graft homozygous for the CCR5-Δ32 mutation [4]. The basis for this cure was first disclosed by Chow et al. in US patent application #09/998,832 [5]. As only a few hundred homozygous CCR5-Δ32 CB units have been found [6], one cannot select the best matched or highest NC unit or use double CBT. Instead of a patient searching for a matched donor, the strategy is for the limited inventory to find the matched HIV patient who has a concomitant transplant indication.

References

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Biography

Dr. Chow is the Lead Founder, Chairman and CEO of CyteTherapeutics. As the Lead Founder and former Chairman, President and CEO of StemCyte, Dr. Chow was instrumental in its rise among the Deloitte & Touche North America Fast 500 companies. Dr. Chow pioneered the concept of using homozygous CCR5-Δ32 stem cells for HCT of HIV patients (Chow et al. US, PCT, EPO, Japan, etc... patent applications), which was acknowledged by the physician of the Berlin Patient

(TheScientificWorld Journal 2011;11:1068). Inventor of the MaxCell (Gen2 and 3) cord blood technologies, he also developed combination strategies to maximize NC and improve patient survival and TRM, and led the largest UCBT Series for Thalassemia. Having completed his internship, residency and fellowships at UCLA Medical Center, Dr. Chow holds a Doctor of Medicine from Harvard Medical School and a Master degree in Cell and Developmental Biology from Harvard University Graduate School of Arts and Sciences.

Conference information

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