16th Stem Cell Club Meeting

Stem Cells and in Immunotherapy

(Organised by the Stem Cells Research, Singapore, Website Committee, http://www.stemcell.edu.sg)

Date: October 16th 2006 (Monday)
Time: 5:15 pm
Venue: Creation, Matrix building, level 4

Host: Suzanne Kadereit, ***SSCC***

Time	**Title**	**Speaker**
5:15-5:45	Mesenchymal stem cells – tools of immunomodulation in cancer treatment	Katarina Le Blanc, ***Karolinska University Hospital***
5:45 –	Networking Session	

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Mesenchymal stem cells – tools of immunomodulation in cancer treatment

Katarina Le Blanc
Department of clinical immunology, Karolinska University Hospital, Stockholm

Bone marrow derived mesenchymal stem cells (MSC) can be expanded and have the capacity to differentiate into several mesenchymal tissues, such as bone, cartilage and fat. Human MSC are not inherently immunogenic in an allogeneic system in vitro, nor are they rejected in vivo according to preliminary results. This makes them candidates for cellular therapy in an allogeneic setting. MSC have immunomodulatory effects; they inhibit T-cell proliferation in mixed lymphocyte cultures, prolong skin allografts survival in baboons and may decrease graft versus host disease (GvHD) when co-transplanted with hematopoietic cells. MSC induce their immunosuppressive effect, at least in part via a soluble factor. Several candidates have been suggested including prostaglandin E_2, indoleamine 2, 3-deoxygenase – mediated tryptophane depletion and hepatocyte growth factor in combination with transforming growth factor (TGF) – β. However, contradictory data exist. A major problem has been that it has been difficult to identify and isolate MSCs after transplantation in vivo. However, MSCs seem to enhance hematopoietic engraftment in recipients of autologous and allogeneic grafts. Recently, they were found to reverse grade IV acute GvHD of the gut and liver. No tolerance was induced. Thus, in allogeneic stem cell transplantation, MSCs may be used for haematopoiesis and graft enhancement, as GvHD prophylaxis, and for the treatment of severe acute GvHD. Control studies are warranted to fully evaluate the possibilities of using human MSC as immunomodulators.

References

1. Le Blanc K, Tammik L et al. Mesenchymal stem cells inhibit and stimulate mixed lymphocyte cultures and mitogenic responses independently of the major histocompatibility complex. Scand J Immunol 2003; 57: 11-20.

2. Rasmusson I, Ringdén O, Sundberg B, Le Blanc K. Mesenchymal stem cells inhibit the formation of cytotoxic T lymphocytes, but not activated cytotoxic T lymphocytes or natural killer cells. Transplantation 2003; 76: 1208-13.

3. Le Blanc K, Ringdén O. Immunobiology of human mesenchymal stem cells and future use in hematopoietic stem cell transplantation. Biol Blood Marrow Transpl 2005; 11: 321-34.

4. Le Blanc K, Rasmusson I et al. Treatment of severe acute graft-versus-host disease with third party haploidentical mesenchymal stem cells. Lancet 2004; 363: 1439-41.