**HLA role in HSCT rejection**

Allogeneic hematopoietic stem cell transplantation (HSCT) has been considered to be an effective approach in the curing of hematologic malignancies and other immune and hematologic disorders. The selection donors of hematopoietic stem cell are highly dependent on the identification of human leukocyte antigen (HLA) identical donor. However, not all patients have been successful in finding the right donors. This is because of the probability of HSCT rejection. Having a donor with an identical HLA always increases the possibility of there being a success in allogeneic hematopoietic stem cell transplantation (HSCT). This paper discusses the role HLA plays in HSCT rejection.

During allogenic stem cell transplantation, there is always the need for the HLA of the patient and the donor to match. This is an implication that the cases of mismatch increase the possibility of HSCT rejection. HLA is a protein that is found on the surfaces of human white blood cells and other tissues (Hanajiri, Murata, Sugimoto, Murase, Sakemura, Goto & Akatsuka, 2015). When there is a mismatch between the HLA of the donor and the HLA of the patient that is supposed to benefit from the allogenic stem cell transplantation increases the possibility of rejection of the allogenic stem cell. This is because the body is likely to treat the donated allogenic stem cell as a foreign entity because of the incompatibility between the HLA of the donated allogenic stem cells and the HLA that are present on the surface of the white blood cells of the recipient. The body system works under the assumption that the allogenic stem cell transplantation is an intruder that needs to be dealt with

The antibodies of HLA, DSHAs are also associated with HSCT rejection. This is because DSHAs causes graft rejection on HSCT primarily because cognate HLA antigens are expressed on hematopoietic precursors and hematopoietic stem cells. The match between the HLA types of the donor is not a factor that entirely rules out the possibility of allogenic stem cell transplantation. This is because of the possibility near-identical donors have also been seen to get involved in successful allogenic stem cell transplantation (Focosi, 2016). This is a factor that always leads to the need for understanding on the donor selection factors before settling for a donor. Using near-identical donors might have the same impact that using donors with the different type of HLA from the patient has.

There are two ways to evoke an immune reaction. One of the ways in which they can illicit response is a representation of variable peptides. Peptides refer to the biological short chains of amino acid monomers. With the varying peptides, it becomes harder for the recipients to identify with the organs thus a high probability of rejection. HLAs can also inhibit immune response by identification of polymorphic fractions of foreign HLA molecules (Montoro, Sanz, Sanz & Sanz, 2016). This leads to the branding of the allogenic stem cell as foreign bodies.

Over the years, there have been studies that have been carried out with the intent of increasing the success rate of organ transplant. Evidently, the role that HLAs plays in the rejection of HSCT cannot be taken for granted. Understanding such a relationship is clearly important in formulating of strategies that will ensure that the rate of HSCT rejection is reduced. HSCT rejection may risk the lives of the patients that are involved while at the same time make the resources used for allogenic stem cell transplantation irrelevant.

**References**

Hanajiri, R., Murata, M., Sugimoto, K., Murase, M., Sakemura, R., Goto, T., ... & Akatsuka, Y. (2015). Integration of humoral and cellular HLA-specific immune responses in cord blood allograft rejection. *Bone marrow transplantation*, *50*(9), 1187-1194.

Focosi, D. (2016). Advances in pretransplant donor-specific antibody testing in solid organ transplantation: from bench to bedside. *International reviews of immunology*, *35*(4), 351-368.

Montoro, J., Sanz, J., Sanz, G. F., & Sanz, M. A. (2016). Advances in haploidentical stem cell transplantation for hematologic malignancies. *Leukemia & lymphoma*, *57*(8), 1766-1775.