Introduction

Up - To Date

Hematopoietic Stem Cell Transplantation in Leukemia

The start of Hematopoietic Stem Cell Transplantation was in 1939 when a patient received 18ml of intravenous marrow from his brother as a treatment for aplastic anemia before this a trial was given to give bone marrow orally.

The true progress in stem cell transplantation occured when development of chemotheraputic agents, progress in blood banking, transfusion science and the development of new potent antibiotic agents so the first successful transplantation was in 1960(**Applelbaum,2004)**

We can say that HSCT was one of the most important medical advancess in the second half of the 20th century. Worldwide approximately 40.000 transplantation are performed yearly, and the number continues to increase by 10-20% each year. More than 20.000 people have now survives 5 years or longer after HSCT **(craddock and chakraverty,2005)** .

Hematopoietic Stem Cell Transplantation is used for hematologic and lymphoid cancers and also used in other non malignant conditions.

Treatment related mortality rates were lower and leukemia free survival rates were higher with HSCT in patients with advanced leukemia (acute

leukemia in second remission or chronic myelogenous leukemia in accelated phases but not in early leukemia)**(Hidalgo et al ,2001).**

Allogenic and autologous stem cell transplantation are considered for treatment of patients with chronic lymphocytic leukemia, but to date there is only limited hope that auto transplantation can cure the disase nevertheless the results of published series suggest that auto SCT is capable of improving the prognosis of CLL with poor risk features**(Duncombe,1997).**

Allogenic transplation is the only form of therapy that enable physicians to cure patients with acute myeloid leukemia and acute lymphoblastic leukemia who dont respond to induaction therapy. Transplantation is superior to chemotherapy in patients with AML in second remission**(Mccullough et al,1999).**

Three sources of hematopoietic cell have been utilized:

a) Syngenic ⟶ cell from genetically identical twin.

b) Allogenic ⟶ cells derived from histocompatible doner.

c) Autologous ⟶ cryopresrved cells.

The Transplantation of marrow that wasn't gentically identical "allogenic" to that recipient resulted in an immunologic reaction by the doner lymphocyte against the recipient causing inflammation of target tissues termed Graft versus host disase (GVHD)**(Brenner et al,1993)**

1- From all these facts we can conclude that Allogenic hematopoietic (SCT) is the treatment of choice for patients withCML.

2- For patients with AML, allogenic hematopoietic stem cell transplantation is the one of the most potent treatment options currently avialable.**(Clift,et al,1992**)