

Complications

• Graft failure/rejection

Graft failure: absence of donor hematopoiesis that may still occur after initial engraftment
Rejection: the patient's immune system rejects the transplanted HSC

• Graft versus host disease (GVHD)

Inflammatory disease (rashes, diarrhea, pneumonitis; main targets are skin, gut, liver, intestinal tract and hematopoietic lineages). May occur in acute or chronic form
Initiated by donor T cells transplanted with the graft that recognize the patient as foreign and attack the patient's histoincompatible tissues.
Highly correlated with the degree of HLA mismatching

Graft versus leukemia (GVL = beneficial effect of GVHD): with the GVHD, donor T cells attack patient's cells, including HSC --> destruction of the last residual leukemic cell
Δ GVL effect is the one of the main reasons why HSCT is able to cure leukemia so effectively

• Infections

Caused by immune suppression given before and after HSCT and/or by delayed (absence of) immune recovery (the patient is neutropenic before graft take)
- Bacterial and fungal infections are typical for early phase after HSCT (absence of granulocytes)
- Viral infections may extend to late phase after HSCT because T cell recovery is impaired

• Side effects

Toxicity of conditioning (irradiation!) for tissues such as mucosa, kidney, liver, heart, lung, gastrointestinal tract, ...)
Many other drugs necessary to treat the patient (GVHD, infections) may have side effects.

• Relapse

Due to survival of some patient's leukemic cells

Surviving leukemic cells may be destroyed by GVL effect
NB: efficacy of the GVL is always proportional to the extent of the GVHD
--> Decreasing the risk of GVHD = increasing the risk of relapse

Therapy: Infusion of patient's original donor T cells (DLI) used to promote GVL effect, is particularly efficient in CML relapse

Recipient & Transplantation

- Hematopoiesis
- Type of transplant
- Indications
- Decision to treat
- Conditioning
- Transplantation

Donor & Compatibility

- Criteria
 - HLA typing
- Search
- Stem cell source

Transplantation barriers

- Structures recognized
 - MHC
 - mHC
- Allorecognition
 - T cells
 - B cells
 - NK cells

Immunosuppression

- Immunosuppressive drugs
- T cell depletion

Reconstitution

- Engraftment
- Myeloid cells
- T cells
- B cells
- Chimerism

LEARNING OBJECTIVES

- Graft versus host disease
- Graft versus leukemia
- Infectious complications