Immune Reconstitution After Peripheral Blood Hematopoietic Stem Cell Transplantation From Matched Sibling Donor

Essay
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By

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دراسة إعادة بناء جهاز المناعة بعد زراعة الخلايا الجذعية المكونة للدم من متبرع متطابق من العائلة

مقالة

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Summary and Conclusions

Allogeneic hematopoietic stem cell transplantation (HSCT) is a potentially curative therapy for many disorders, such as hematologic and oncologic malignancies as well as immunologic and metabolic disorders.

Unfortunately, cure is often hampered by some complications such as relapse of the underlying disease, graft-versus-host disease, or severe opportunistic infections, which account for the majority of deaths after HSCT.

Despite considerable progress in the management of these complications, infections remain an important cause of post-transplant morbidity and mortality, mainly after allogeneic HSCT.

Specific immune defects are associated with each of the different stages of transplantation, which put patients at risk of developing different types of infections.

In the pretransplantation period: baseline host status, medication therapy, pre-existing neutropenia or compromised barrier defences lead to infections at this stage. So before transplantation, screening is needed to identify potential infectious agents that may put the patient at risk following the immunosuppression that precedes the transplantation.

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بسم الله الرحمن الرحيم

قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا
إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم

البقرة الآية ٣٢

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List of Abbreviations

αβ T cell	Alpha beta T cell
α4β7 integrin	Alpha 4 beta 7 integrin
ADCC	Antibody-dependent cell-mediated cytotoxicity
aGvHD	Acute graft versus host disease
allo-HSCT	Allogeneic hematopoetic stem cell Transplantation
allo-SCT	Allogeneic stem cell transplant
APCs	Antigen presenting cells
ATG	Antithymocyte globulin
auto- PBSCT	Autologous – peripheral blood stem cell transplantation
BAL	Broncho-alveolar lavage
2-CDA	2-chlorodeoxyadenosine
CB	Cord blood
CCR5	C-C chemokine receptor type 5
CCR7	C-C chemokine receptor type 7
CDR3	Complementarity determining region 3
Chm	Chimerism
Corynebacterium JK	Corynebacterium jeikeium
CpG	Cytosine, phosphodiester , guanine
CTL	Cytotoxic T-lymphocyte

CTLA-4	Cytotoxic T-lymphocyte-associated protein 4
CXCR3	Chemokine receptor CXCR3
DCs	Dendritic cells
DLI	Donor lymphocyte infusion
DTH	Delayed type hypersensitivity
EBMT	European Group for Blood and Marrow Transplantation
ECIL	(European Conference on Infections in Leukaemia)
FAS-L	Fas ligand
Fcg receptors	Fc-gamma receptors
FISH	Fluorescence in situ hybridization
FL	Flt3 ligand
G-CSF	Granulocyte colony-stimulating factor
GM-CSF	Granulocyte-macrophage colony-stimulating factor
GVHD	Graft versus host disease
GVL	Graft versus leukaemia
HDM	High density microparticles
HEPA	High efficiency particle extraction
HLA	Human leukocyte antigen
HSCT	Haematopoietic stem cell Transplantation
HSPs	Heat-shock proteins
HvG	Host versus-graft reaction
IFI	Invasive fungal infection

IFN	Interferon
IFN-α	Interferon alpha
IFN-γ	Interferon gamma
IGF-1	Insulin-like growth factor-1
IL	Interleukin
IR	Immune reconstitution
IVIG	Intravenous immunoglobulin
KGF	keratinocyte growth factor
KIR	killer-cell inhibitory receptor
LAK	lymphokine-activated killer
LLME	Lleucyl- L-leucine methyl ester
LPD	Lymphoproliferative disorders
MAbs	monoclonal antibodies
MACS	Magnetic-activated cell sorting
MBL	mannose binding lectin
MPO	Myeloperoxidase
NASBA	nucleic acid sequence-based amplification
NBT	nitroblue tetrazolium reduction test
NST	Non myeloablative stem cell transplant regimens
PBMC	peripheral blood monocytes
PRP	polyribosylribitol phosphate
PRRs	pattern recognition receptors

PTLD	post-transplant lymphoproliferative disease
RTE	recent thymic emigrants
TBI	total body irradiation
TCD	T-cell depleted
TCR	T-cell receptor
TGF-β	tumour growth factor beta
TK	thymidine kinase
TLR	Toll-like receptor
TREC	T-cell receptor rearrangement excision circles
VDR	vitamin D receptor
VEGF	vascular endothelial growth factor
VOD	veno-occlusive disease

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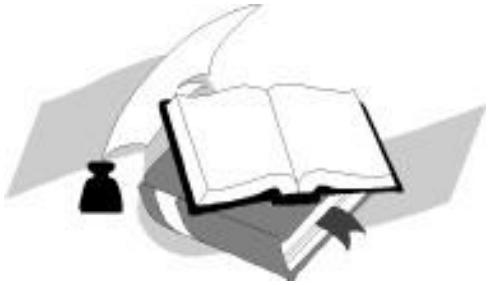
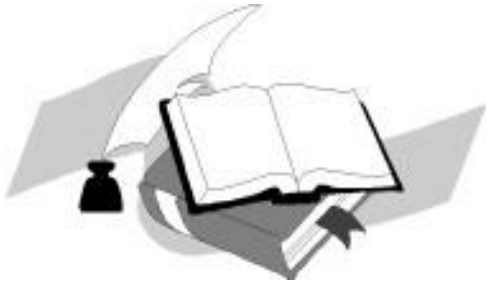
Introduction



Chapter (1)

Overview on the Immune System in Relation to Hematopoietic Stem Cell Transplantation



Chapter (2)

Infections after HSCT