

# **CASE STUDY**

## **DONOR AND RECIPIENT INFECTIOUS SCREENING IN HEMATOPOIETIC STEM CELL TRANSPLANTATION**

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## EXTENSIVE INTERNATIONAL COLLABORATION AND EXCHANGE OF HPC PRODUCTS

- The suitability criteria for related donors (RDs) is often less strict and with considerable variability between transplant centers
- National Marrow Donor Program (NMDP)
- World Marrow Donor Association (WMDA).
- These national registries develop and establish appropriate guidance to ensure HPC donation is performed safely and ethically in volunteer URDs and have published their recommendations for donor evaluation
- the American Society for Blood and Marrow Transplant (ASBMT)
- International Society for Cellular Therapy (ISCT),
- Center for International Blood and Marrow Transplant Research (CIBMTR).
- EBMT

# ALLOGENEIC BMT: IMMUNE DEFECTS

Aplastic phase

GVHD phase

Late phase

Granulocytes

T-cells

B-cells

Mucosal lesions

B-cells

T-cells

Macrophages

Granulocytes

T-cells

NK-cells

0-3 weeks

3wk-3 (-6 mths )

6 mths-yrs

# Allogeneic BMT: immune defects

Aplastic phase

GVHD phase

Late phase

Gram pos bact

CMV

Pneumococci

Gram neg bact

VZV

H.Influenzae

Candida

HHV-6

VZV

HSV

Aspergillus

RSV?

RSV, influenza

Candida

Adenovirus

0-3 weeks

3wks-3 (-6 mts)

6 mths-yrs

# HBV AND HEMATOPOIETIC STEM CELL TRANSPLANTATION

- A 41-year-old male referred for BMT (from an HLA-matched related donor) for high risk acute myeloid leukemia in Taleghani BMT center (Shahid Beheshti university of medical sciences)
- . At the pretransplant infectious screening screening:
- **He was negative for HBsAg but was positive for both HBsAb and HBcAb.**
- **In chest Ct scan two pulmonary nodules were seen ,one of the with a 7mm cavity and a few GGO were seen**
- **What do you recommend?**
-

# HBV AND HEMATOPOIETIC STEM CELL TRANSPLANTATION

- He underwent bronchoscopy and bronchoalveolar lavage : **mucoromycosis** was reported in pathologic report
- HBV was evaluated by PCR:      Negative HBV DNA PCR
- **What do you recommend?**

# HBV AND HEMATOPOIETIC STEM CELL TRANSPLANTATION

- After receiving an antifungal course of treatment he was admitted in HSCT ward
- **What do you recommend as infection prophylaxis in the HSCT process**

# HBV AND HEMATOPOIETIC STEM CELL TRANSPLANTATION

- Psoconazol
- Tenofovir
- He received SCT from{ the only donor}his younger sister owho had a recent pregnancy on 1401/8/14 with out significant complication with full chimerism
- He received CSA , MTX and ATG for GVHD prophylaxis
- He had an extensive upper limb thrombosis on day +45 ,the evaluation showed a hereditary thrombophilia [homozygote mutation in PAI]



# HBV AND HEMATOPOIETIC STEM CELL TRANSPLANTATION

- On day +100 he admitted with extensive skin rash ,painfull mocositis ,severe conjunctivitis and increased liver enzymes
- Diagnosis : Overlap syndrome : he was scored as moderate
- Prednisolon 50 mg was addede
- Other medications:Aciclovir/CMX/fluconazol/zalerban /CSA
- He had partial response first but he had especiaaly mucocutaneous GVHD flare after CS dose **cellcept** was added ,He referred to dermatologist and **tufacitinib** 5 BID was prescribed
- He was admited to hospital again with extensive skin rash[**hyperpigmentation ,lichen planus erythroedema**],painfull mocositis ,severe conjunctivitis and dyspenea. {**FEV1 65% Mod to severe Obstruction**},liver function tests were NL Muntelucast and azithromycin was added and we decided to start **Roxulotinib. OR Photophoresis**

# HBV AND HEMATOPOIETIC STEM CELL TRANSPLANTATION

- HBS Ab +
- HBc Ab +
- HBs Ag +
- Viral load **28 917 270.iu/ml**
- SGOT 87
- SGPT 101
- CMV: Neg
- HBV treatment was started by infectious disease specialist cellcept was continued and CS was reduced to 10 mg
- He experienced another acute thrombosis in lower limb

# HBV AND HEMATOPOIETIC STEM CELL TRANSPLANTATION

- On 1402/11/12
- HBV viral load 367 iu/ml
- Chronic refractory moderate to severe GVHD in physical examination
- Are we allowed to start
- **Roxulotinib**
- **Ibrotinib**
- **What is your recommendation?**

# NATURAL PROTECTION

HUMORAL IMMUNITY



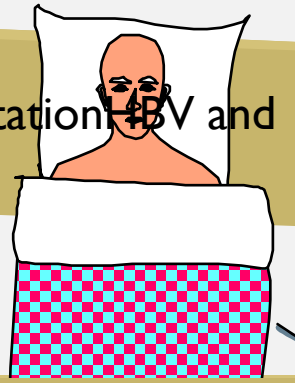
GRANULOCYTES



ORGAN FUNCTION

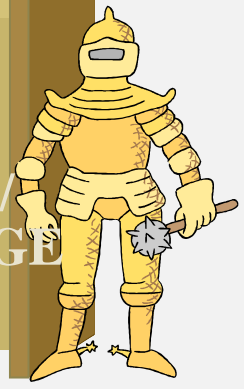


HBV and hematopoietic stem cell transplantation  
HBV and hematopoietic stem cell transplantation

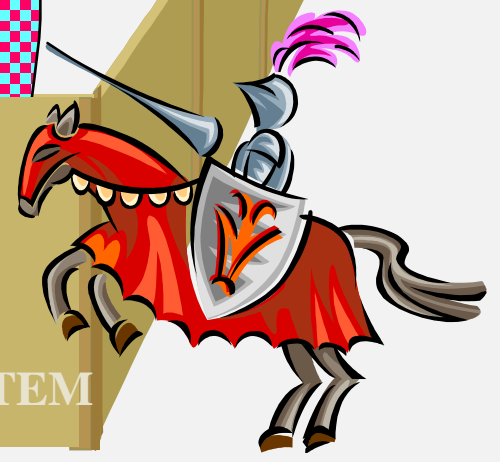


THROMBOCYTES

MONOCYTE /  
MACROPHAGE  
SYSTEM



SKIN  
MUCOUS  
MEMBRANES  
CILIARY SYSTEM



CELLULAR IMMUNITY

# **CASE STUDY**

## **TOXOPLASMOSIS SCREENING IN HEMATOPIETIC STEM CELL TRANSPLANATION**

- A 38-year-old male patient was diagnosed with “multiple myeloma” referred to Taleghani hospital in 1389 for auto-HSCT
- **In pretransplant evaluation the toxoplasma gondii IgG and IgM were positive**
- What do you recommend?

# **CASE STUDY**

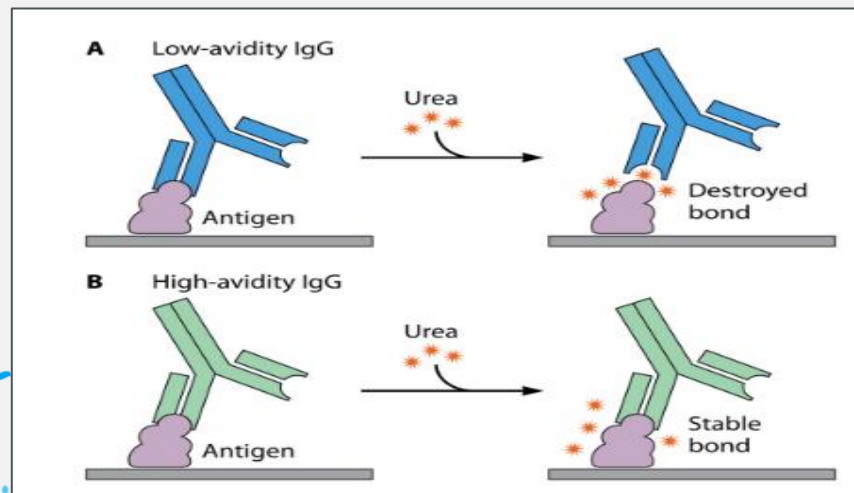
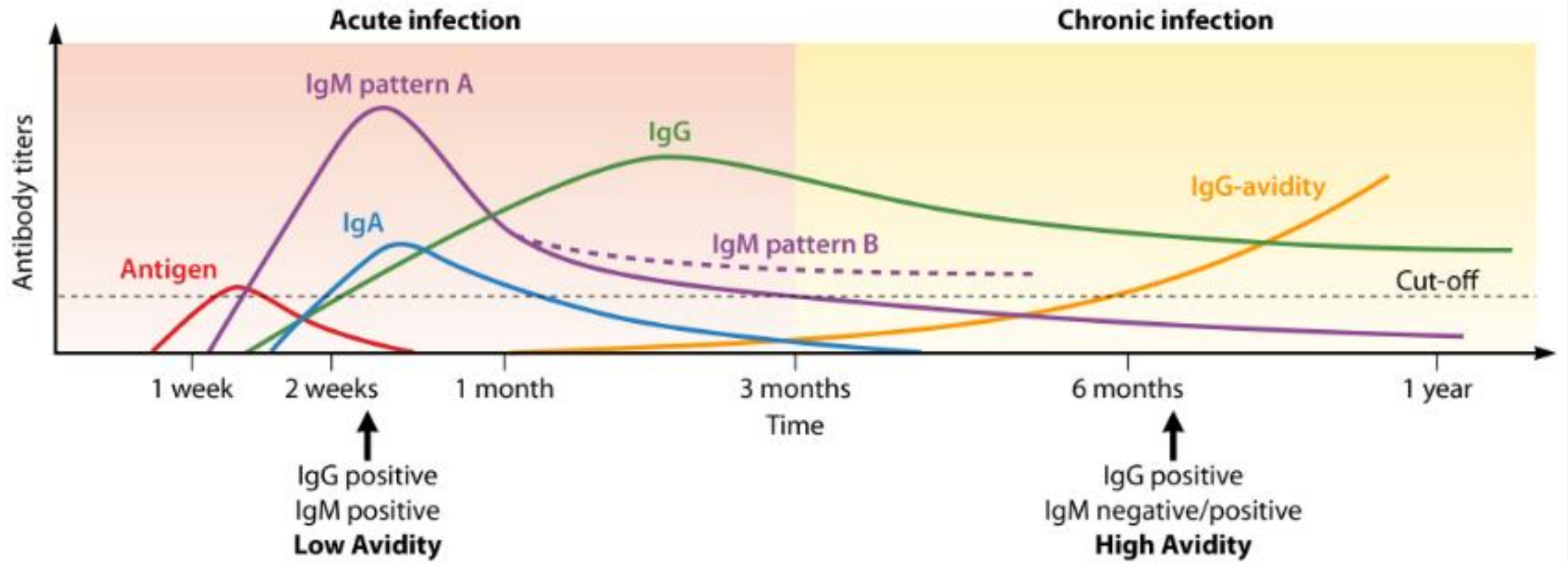
## **TOXOPLASMOSIS SCREENING IN HEMATOPIETIC STEM CELL TRANSPLANTATION**

As a routine practice in young MM patients hematopoietic stem cells were harvested for this patient after a few weeks but **blood bank refuse to do cryo preservation for these cells**

**What do you recommend to confirm the diagnosis?**

**Is the toxoplasmosis harm full in patients who undergo HSCT?**

**Is there any prophylaxis**



## **CASE STUDY**

### **TOXOPLASMOSIS SCREENING IN HEMATOPIETIC STEM CELL TRANSPLANTATION**

- Patient was treated with **clindamycin and primetamin**
- A few weeks later: IgG Positive/IgM got negative . Stem cells were harvested again and cryo preserved
- Patient underwent AHSCT with 200 mg/m<sup>2</sup> in 1990. he received CMX prophylaxis for 3 months
- He followed after transplantation and received maintenance thalidomid therapy then
- He relapsed in 1998 and treated. He screened again for the second salvage transplant .Toxoplasmosis IgG positive.IgM negative
- Second transplantation was performed using harvested cell
- No complication due to toxoplasmosis has occurred up to now



## **CASE STUDY**

### **TOXOPLASMOSIS SCREENING IN HEMATOPIETIC STEM CELL TRANSPLANTATION**

- A 24 years old B thalassemia major female patient referred for Allogenic hematopoietic stem cell transplantation
- The donor search:
  - No match related donor
  - No national unrelated donor
  - A full match international unrelated donor from NMDP

Toxoplasma gondii IgG and IgM were positive twice in 2 months interval in donor •

**What do you recommend?** •

**CASE STUDY**  
TOXOPLASMOSIS SCREENING IN  
HEMATOPIETIC STEM CELL  
TRANSPLANATION

- We didn't accept this donor

**CMV IS STILL A CHALLENGE**

# CMV IS STILL A CHALLENGE

patient	diagnosis	donor	Donor CMV /recipientCMV sttus	Pre empitive prophylaxis	GVHD	
Female 35y	HR AML	MUD	-/+	+	+	CMV disease viral load 100 x10 <sup>6</sup> /micL+ acute GVHD
Male 25	AML	MRD	+/+	+	+	CMV reactivation and hem. Cystitis. Finall treated with intravesical sidofovir. Now c GVHD
Male 47	Very HR AML	MM URD	+/+	+	-	MDR klebsiela. Then CMV reactivation viral load 1360/mic L now 400/mic L

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