CHALLENGES OF BMT ACTIVITIES IN VIETNAM

TRAN VAN BINH

INTRODUCTION

- Hematopoietic Stem cell transplantation: the best way to manage Malignancies and non Malignant blood disorders.
- Need considerable resources material and human.
- In developping countries: great challenges to select patients by many problems both by indications and material possibilities .
- Our experiences from VIETNAM:

since 1996: 152 cases performed.

COUNTRY PROFILE

VIETNAM: the small country of the Indo-China Peninsula

* Population: 85 millions

(3rd most populous after Indonesia and Philippine)

* 58.9%< 25 years of age,

* Population density 259 /km^2,

Percapita income 1.052 USD /year,

* 29.6% live in city

COUNTRY PROFILE

6 Transplantation Centers:

- ***North VietNam:***
  - *108th Military Institute (8 cases);*
  - *Pediatric Institute (6 cases);*
  - *Police Hospital (1 case);*
  - *National Blood Transfusion and Hematology Institute (35 cas)*
- ***Middle VietNam:*** *Hue Central Hospital (5 cases)*
- ***South VietNam:***

Blood Transfusion and Hematology Hospital HoChiMinh City

(98 cases)

THE 6 BMT CENTERS OF VIETNAM

4 centers

1 center

1 center

TRANSPLANT EXPERIENCES

THE TRANSPLANT UNIT

- **10 FIRST TRANSPLANTATIONS:**
  - ✓ **Clean room:**

    isolated, double door, furnitures decontaminated by UV and pulverized chemical, water filtrated.
  - ✓ **Patients sterelized:**

    hair cut, antiseptic baths, decontaminated GI tract by non absorbable antibiotics, well cooked foods.
  - ✓ **Physicians:** Wash hand
- **From 2005: Positive pressure ventilation, HEPA**
  - ✓ 6 well trained nurses permanent take care of patients
  - ✓ run by 6 physicians for adults, 2 for pediatric patients
  - ✓ supported by all others departments of the hospital

CHOICE OF PROTOCOLS

- **MOBILISATION:**
  - ***For Autologous:*** Stem cell extracted by cytapheresis after Cyclophosphamide (1-2 g/m^2 on D1, D2); G-CSF (10 µg/kg); cell dose MNC > 3 x10^8 /kg or CD34+ > 2 x10^6 /kg.
  - ***Autologous for CML:*** Mobilisation by mini ACE (Daunorubicin 50 mg/m^2 x 5 days; AraC 3 days; G-CSF 10mg/kg x 7 days)
- **CONDITIONING REGIMENS:** (Allogeneic)

  TBI not available . Must use conditioning by only Chemotherapy: Bu/Cy Protocol (AML, ALL, Thalassemia)

  Busulfan 4 mg/kg/day x 4 days; Cyclophosphamide 60mg/kg/day x 2 days ; G-CSF 5µg/kg from the cell nadir

- Odansetron, Dexamethasone (for vomiting)
- Cyclophosphamide, short course of methotrexate for GVHD
- BEAC for NHL

  (BCNU, Etoposide, AraC, Cycophosphamide)
- ATG, Cyclosporine for SAA
- All patients tolerated well, Engrafments between acceptable limits
- MELPHALAN high dose (180 mg), Storage bone marrow and stem cell at 4^{o}C (<72h) (at the begining, cryopreservation not available) for some acute leukemia (good results, long survival)

SUPPORTING MANAGEMENT

- Isolation, sterile nursing, clean room (before 2005), laminar air flow
- Blood and blood components transfusion (irradiated)
- Preventive antibiotherapy, appropriate infection diagnosis, empirical antibiotherapy
- Diagnosis and management of complications: GVHD, VOD
- Tight cooperation between clinicians and lab

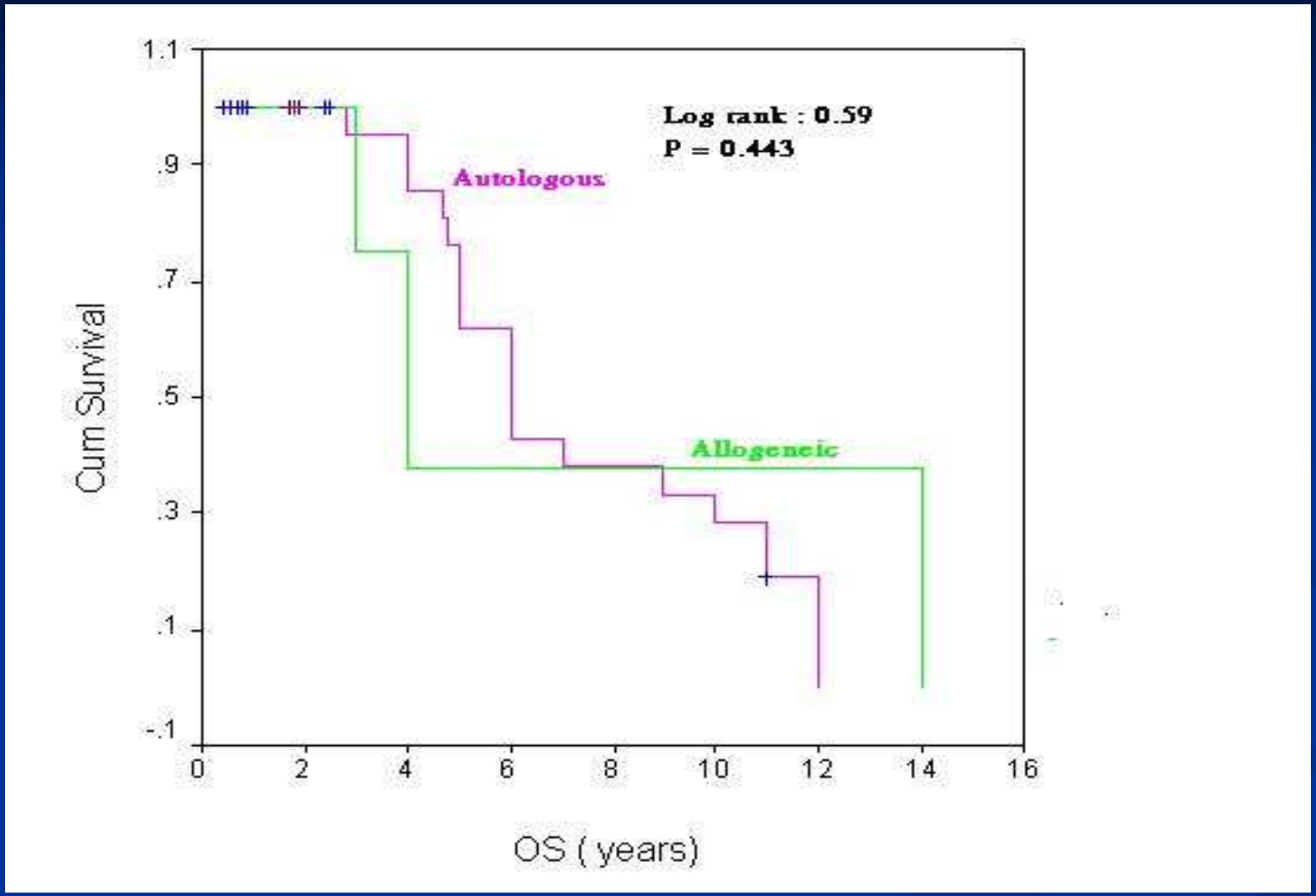
SOME RESULTS OF HOCHIMINH CENTER

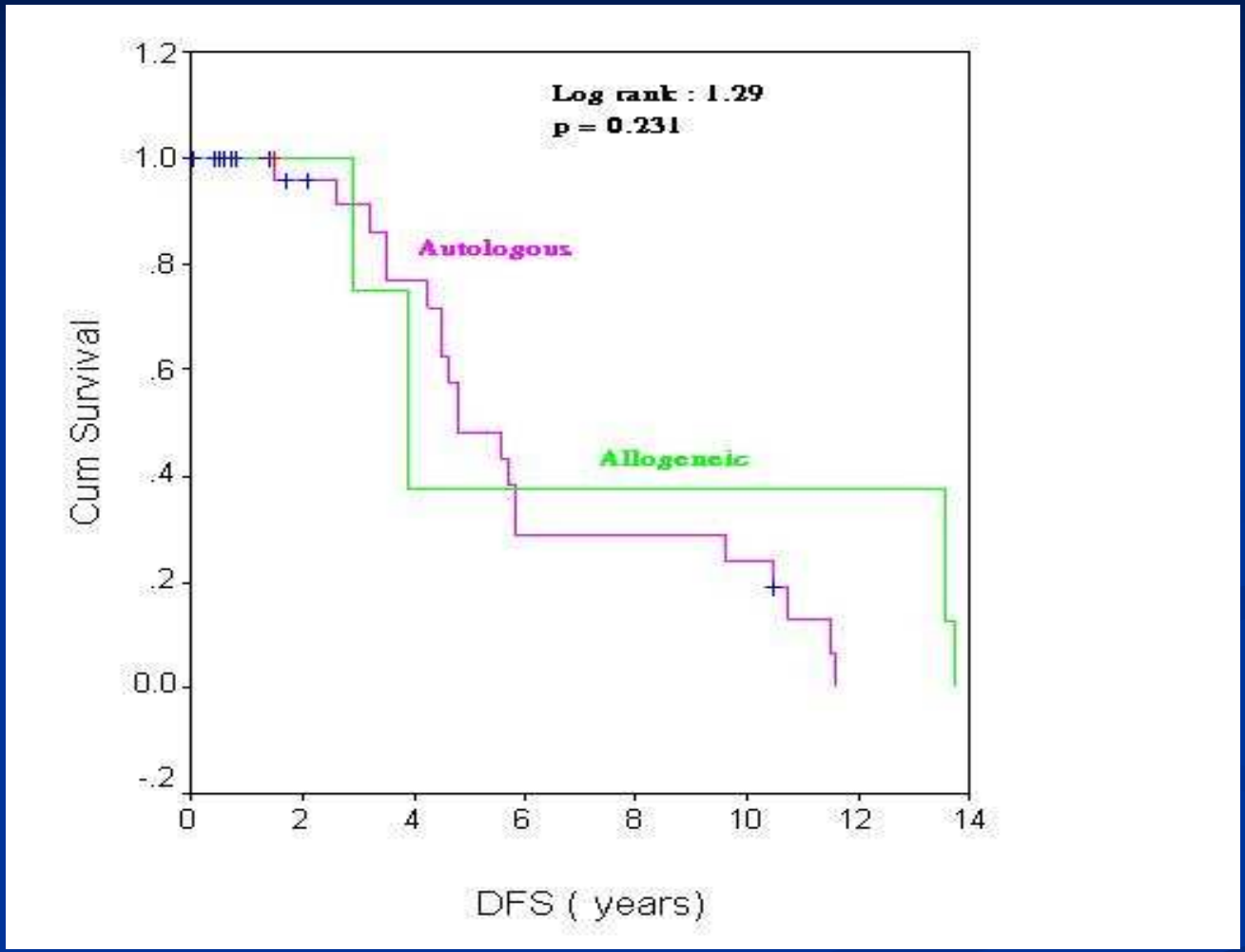
Number of cases : 98

Transplantation procedures	No of cases	Rate %
ALLO HSCT	**45**	**46**
BMT	4	4
CORD BLOOD	10	10
PBSCT	31	32
AUTO PBSCT	**53**	**54**
Without cryopreservation	24	24.5
With cryopreservation	29	29.5

DISEASES TREATED

	No of cases	Rate %
AML	63	65
ALL	6	6.2
CML	17	17.5
NHL	3	3
Thalassemia	7	7.3
A. Anemia	2	2
Median Ages: 28 (4-50)		


Log rank : 0.59
P = 0.443
Autologous
Allogeneic
Cum Survival
1.1
.9
.7
.5
.3
.1
-.1
0
2
4
6
8
10
12
14
16
OS (years)


Log rank : 1.29
p = 0.231
Autologous
Allogeneic
Cum Survival
1.2
1.0
.8
.6
.4
.2
0.0
-.2
0
2
4
6
8
10
12
14
DFS (years)

CHALLENGES TO STEM CELL TRANSPLANTATION IN VIETNAM

PATIENTS SELECTIONS

* Blood Transfusion and Hematology Hospital treat > 500 cases of leukemia and other non malignant disease / year

* Indication for Transplants > 100

* BMT done 10-20 (year : < 10% of need)

* Many difficulties to be overcome

I/- THE COST OF THE PROCEDURE

* Effort to reduce the cost of the operation (Intensive conditionning, aggressive care) (lowest in Asia) the majority of the population (>90%) cannot afford the cost (price much less than Western countries):

- Allo BMT: 20.000 USD (15.000 without complication; serious complications: 45.000 – 50.000)
- In Children: 15.000USD

(medications,consumable materials; imported)

- covered partially by National Medical insurance

- Rich patients: BMT done abroad (Singapore, US)
- Not confident in our limited expriences,
- Unavailabilty of full range of medications (in cases of complication: GVHD, VOD…): Blood products, Antibiotics, Antifungal…)
- Difficulty to make follow up : some patients live far of the hospital

2/-IMPROVE THE OVERALL LEVEL OF MEDICAL CARE OF THE COUNTRY:

Great problems about improvement of level of Medical care:

- Low Budget for Hospital Modernization

- Salary of medical doctor still low → exodus of qualified specialist in other countries The remaining → private practice → reducing time for study and research; 400 hematologists /85 millions. Very few in transplantation field

Hematologists : Lack of awareness of Indication and efficacity of Transplantation procedures. Majority of patients refered to us at late stage after heavy treatment and toxicity limiting possibility of useful interventions

3/- DIFFICULTY OF FINDING APPROPRIATE DONORS:

- Allogeneneic unrelated unavailable by lack of National Bone Marrow Registry
- Perfect mathched related donors : more and more difficult to find (sibbling) : Vietnamese family size shrink by National Birth control program
- Autologous , cord blood as alternative sources

4/- PATIENT EVALUATION PRIOR TO TRANSPLANT :

All transplantation candidates must have preevaluation in order to have good outcome :

-Autologous patients : no active disease in the bone marrow , adequate collection of PBSC from peripheral blood

- Allogeneneic patients : sibbling donor matched HLA , age , CMV

- Patient Performance status , age , disease stage (Indication)

Extensive evaluation by the transplant physician :

-Guide the informed consent process

-Psychiatric social behavior

- Physical examination , evaluation of all organ functions : oral cavity , lung , liver , heart , kidney , central nervous system . Karnosky score , infectious disease story : viral (CMV , HBV , HCV , HIV , Fungi) , previous chemotherapy , radiation , transfusion history ,

- Patient must satisfy criteria according to specific protocol

- Possibibity of follow up (live < 200km)

These strict criterias eliminate some potential patients

FUTURE DIRECTIONS

* Waiting New technics less expensive, less risky procedures of BMT

* Immediate planning, try to sustain our activity, enlarge it by

introducing new technics like Non myeloablative (treat more older patients > 50 yo) , aploidentical (donors in the same familily)

* Need to develop more transplants centers , introduce BMT possibilities to more provinces by transfert of technology

- Try to work with medical insurance to cover more , to lower the participation of patient and family in the cost

- Challenges should be solved not only by medical profession but by the entire vietnamese society

OUR FACILITIES

FROM NOTHING… TO EVERYTHING

… AND BEYOND

OUR MOST PRECIOUS RESOURCE

THE TRANSPLANTATION TEAM

Clean room , sterile nursing

THE TRANSPLANTATION UNIT

STERILE NURSING , HEPA FILTER

BLOOD PRODUCTS

GOOD TRANSFUSION PRACTICE

IRRADIATION OF BLOOD PRODUCTS

CYTAPHERESIS

PERIPHERAL BLOOD STEM CELL HARVEST

CORD BLOOD BANKING

PROCESSING OF STEM CELL AND CORD BLOOD

CRYOPRESERVATION

BIOARCHIVE SYSTEM

LABORATORY SUPPORT

FLOW CYTOMETRY

MOLECULAR, CYTOGENETIC

THE BLOOD TRANSFUSION AND HEMATOLOGY HOSPITAL

OF HO CHI MINH CITY

Thank you for your attention