Therapeutic Apheresis in Asia
An Indonesia Single Center Experience

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Sardjito Hospital Blood Service
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- No of blood released: 2,500 units/ mo
- Number of donations: 1,500/ mo
Blood Components Transfused

- TC: 30%
- PRC: 56%
- WB: 7%
- FFP: 6%
- WE: 1%
Apheresis is aimed to:

Collect a therapeutic dose of a particular component e.g. Plateletpheresis

Therapeutically reduce the circulating amount of a particularly harmful component e.g. TPE

Collect a particular blood cell/precursor from a patient for re-infusion e.g. PBSC Collections
Therapeutic Apheresis (TA) Modalities

- TPE
- Leukocytapheresis
- Thrombocytapheresis
- Erythrocytapheresis
- RBC exchange
- LDL apheresis
- Adsorptive cytapheresis
- Lymphocytapheresis
- ECP
- Rheopheresis
Phases of Apheresis Services at Sardjito Hospital Yogyakarta Indonesia

Apheresis Machines:
- 1 from Sanquin
- 1 from MOH

Training for teams
Preparation of disposables, tariff, etc.

Socialization
Continous evaluation
Sanquin Donation
Apheresis Usage

**Donation**
- Apheresis Platelet

**Therapeutic**
- Leukocytapheresis
- TPE
- Thrombocytapheresis
Leukocytapheresis

Bar chart showing the number of procedures from 2009 to 2013:

- 2009: 3
- 2010: 20
- 2011: 38
- 2012: 87
- 2013: 56
Leukocytapheresis 2009-2013

• No. of procedures: 204
• No. of patients: 137
• No of procedures/ patient: 1-4
• Median of patient ages: 40 (17-84) years
Leukocytapheresis 2009-2013

• Median of pre-procedure leukocyte count: 262 (51-632) x10³/ uL
• The decrease of leukocyte count: 26-46%
• Diagnosis of patients:
  – CML : 130
  – AML : 5
  – ALL : 2
• Leukocytapheresis is used to reduce pathologic leukocyte count, and risk of tumor lysis syndrome.
• Indicated for hyperleukocytosis patients with leukostasis.
• ASFA (2013) Category/ Grade : I/ IB

Schwartz et al. Journal of Clinical Apheresis.2013
Leukocytapheresis

• does not improve overall survival.

• Can be performed without delaying the supportive treatment with hydration, allopurinol, and hydroxyurea.

Hyperleukocytosis-associated early mortality rate is high in AML and is not reduced by universal or selective approaches to leukapheresis or hydroxyurea/low-dose chemotherapy.
Leukapheresis is safe and effective therapeutic option for patients with complications of hyperleukocytosis. Permanent organ damage or death could be avoided.

Veljkovic et al. Transfusion and apheresis Science.2012
Therapeutic Plasma Exchange

![Bar chart showing the number of plasma exchange procedures from 2009 to 2013. The numbers of procedures are as follows: 0 in 2009, 1 in 2010, 9 in 2011, 20 in 2012, and 30 in 2013. A photo of a patient undergoing plasma exchange is also included.]
TPE 2009-2013

- No. of procedures: 72
- No. of patients: 17
- No of procedures/ patient: 1-6
- Diagnosis of patients :
  - Guillain-Barre Syndrome (GBS): 15
  - Myasthenia Gravis (MG) : 1
  - Devic’s Syndrome : 1
TPE 2009-2013

• Replacement fluid: 5% Albumin; Kolloids; Normal (0.9%) saline.

• Combination of fluid – economy reason

• Side events: Febrile (1); hematome (1); hypotension (1)
T P E
A therapeutic procedure in which blood of the patient is passed through a medical device which separates out plasma from other components of blood, the plasma is removed and replaced with a replacement solution such as colloid solution (e.g., albumin and/or plasma) or combination of crystalloid/colloid solution.

Schwartz et al. Journal of Clinical Apheresis.2013
• TPE is indicated for many cases of autoimmune diseases, rejection, etc.
• In our hospital, performed mostly for Guillain-Barre Syndrome.
• ASFA (2013) Category/ Grade : I/ IA
Guillain-Barre Syndrome

• = Acute Inflammatory Demyelinating Polyneuropathy.

• An acute progressive paralyzing illness affecting both motor and sensory peripheral nerves.

• TPE treatment can accelerate motor recovery, decrease time on the ventilator, and speed attainment of other clinical milestones.

Schwartz et al. Journal of Clinical Apheresis. 2013
Overall response was seen approximately in 90% of patients. Side effects were mostly mild to moderate and they were manageable. TPE is an effective and safe treatment option in several neurological diseases.
TPE results are encouraging and it is a cost effective alternative to IVIG in neurological disorders. Adverse events were reported in 52.8% of patients in 14.83% of procedures.

Sharma et al. Transfusion and apheresis Science. 2011
Thrombocytapheresis

![Graph showing the number of procedures from 2009 to 2013](image)

- 2009: 0 procedures
- 2010: 4 procedures
- 2011: 9 procedures
- 2012: 1 procedure
- 2013: 0 procedures
Thrombocytapheresis 2009-2013

- No. of procedures: low
- Diagnosis of patients: Thrombocytosis
- ASFA (2013) Category/ Grade: II/ IIC
Conclusions

• Therapeutic apheresis is still a new procedure in our center/country.
• Leukocytapheresis, TPE, and thrombocytapheresis were already performed as therapeutic modalities.
• Technical aspects of the procedure, socialization, and economical coverage should be considered to improve implementation of therapeutic apheresis.
Thank you