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PBL-IX

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Blood Transfusion Types

Blood Transfusion

- **Whole Blood；**
- **Blood Component；**

  RBC　PLT　FFP　Leukocyte concentrate

- **Plasma Substitutes；**

Red Blood Cells

- **Symptomatic anemia (providing oxygen-carrying capacity)**
- **Transfusion trigger (HCT<30% ; HB<10g/dl)**
- **1 Unit increases 3% HCT or 1g/dl**
- **Shelf life =42 d (1-6 ℃)**

Platelets

- **Thrombocytopenia**

  (< 50,000)

- **Platelet dysfunction**

- **Each unit increase 5,000 PLTs after 1 H**

Granulocytes

- **Profoundly granulocytopenia (<500)**
- **Serious infection not responsive to antibiotic therapy**

Fresh Frozen Plasma (FFP)

- **Coagulation factor deficiencies**
- **1 ml increases 1% clotting factors**
- **Being used as soon as possible**
- **Albumin, hetastarch, crystalliods are equally effective *volume expander* but safer than FFP**
- **Slowly up slowly down à volume overload**
- **After use of 5 U of RBCs, matching 2 U of FFP**

Plasma Substitutes

Dextran

- **Most widely used**
- **Low/Middle M.W. (40,000-70,000)**
- **Massive transfusion could impair coagulation**
- **Occasional ALLERGIC reaction**

Hydroxyethyl Starch Formulation (HES)

- **More stable**
- **Containing essential electrolytes**
- **No allergic reaction**

--*Volume Expander*

Component Transfusion:

- **Saving blood source**
- **Less likely carrier of transmitted diseases**
- **Shortage of quality blood**
- **Greater shelf life than whole blood**
- **Helping to make blood safer by filtration**
- **Infusing regardless of ABO type in some blood products**

giving only essential/desired blood component

Blood Transfusion Reactions

Complications of Transfusion

- Transfusion reactions occur in 2% of units or within 24 hours of use.
- Most common adverse side effects are usually mild and non-life-threatening
- Two categories:
  - Infectious complications
    - HIV and HCV **à** 1 transmission/2 million transfusion
    - Malaria
  - Non-infectious complications

Non-infectious Complications of Transfusions

Technical Manual

- Acute (< 24°)
  - Immunologic
  - Non-immunologic
- Delayed (> 24°)
  - Immunologic
  - Non-immunologic

Acute (< 24°) Immunologic

- Hemolytic
- Fever/chills, non-hemolytic
- Urticarial/Allergic
- Anaphylactic

Acute (< 24°) Non-Immunologic

- Hypotension associated with ACE inhibition
- Transfusion-related acute lung injury (TRALI)
- Circulatory overload
- Nonimmune hemolysis
- Air embolus
- Hypocalcemia
- Hypothermia

Delayed (> 24°) Immunologic

- Allo-immunization
  - RBC antigens
  - HLA
- Hemolytic
- Graft-versus-host disease (GVHD)
- Post-transfusion purpura
- Immuno-modulation

Delayed (> 24°) Non-Immunologic

- Iron overload

Splenectomy

Indications

- Trauma – commonest
- Spontaneous rupture
  - Infect mono
  - Malaria
- Hypersplenism
  - H. spherocytosis
  - Elliptocytosis
  - ITP
- Neoplasia
  - Leukemia
- With other viscera
  - Total Gastrectomy
  - D. Pancreatectomy
- Others
  - Hydatid
  - abscess

Infectious Mononucleosis

- Glandular fever
- 1920 article , John Hopkins Med bulletin
- Triad- fever, lymphadenopath, pharyngitis
- 80% Epstein Barr Virus
- Remaining majority – CMV

Syndrome consist of

- Fatigue, Fever, Splenomegaly, Adenopathy and Pharyngitis.
- Transmission - kissing
- Incubation – 30 - 50 days
- Incidence – 50/100,000 general population

  - 5000/100,000 Susceptible college students.
- Age – 15 – 24 years.

Overwhelming post Splenectomy infection(OPSI)

- Infection due to encapsulated bacteria.
- 50% Strep. Pneumoniae.
- Other organisms-

  *Haemophilius influenzae

  *Neisseria meningitidis
- Incidence is 4% in post splenectomy patients without prophylaxis.
- Mortality is 50% of OPSI
- Highest risk in first 2 years after splenecotmy.

Prevention of OPSI

- Antibiotic prophylaxis-

  * penicillin or amoxicillin
  * duration ? Life long
  * for sure in kids up to 16 years of age.

- Immunization-

  *Pneumococcal and Haemophilius
  *given 2 weeks before elective surgery
  *immediately post op for emergency cases.
  *repeat every 5 -10 years.

Splenectomy

Pre splenectomy:

Vaccination

Obtain pneumococcal IgG titers. If the titers are inadequate, immunize to maximize coverage of all serotypes (7-valent conjugate vaccine recommended in children under five years (Prevnar)

23 valent (Pneumovax) as a booster at five years of age or later. Reimmunize patients with inadequate IgG responses.

Splenectomy

Post splenectomy:

-Monitor the platelet count and treat with an anti-platelet aggregate (low dose Aspirin) if platelet count is 1 x 106 or greater.

-Consider chronic low dose anticoagulation (coumadin) or anti-platelet agent (aspirin) in older splenectomized patients reduce the risk of pulmonary thrombotic events and pulmonary hypertension.

-All post splenectomy thalassemia patients require treatment with prophylactic penicillin.

-Intensive family education should be provided.

RTA: Libya

Research Corner

A study of a decade of road traffic accidents in Benghazi - Libya: 2001 to 2010

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Abstract:

This paper aims to observe and to study the trends of road traffic accidents (RTA's) for the past ten years in Benghazi – Libya. A retrospective analysis was done using the patient records of Al-Jalaa hospital (the main trauma center in Benghazi) from over 21,753 RTA cases. The annual data were compared to each other and changes of trends were observed. RTA's represented an increasing percentage of Al-Jalaa's case load across the years. Around 41% of these cases needed to undergo surgery. The younger age group (20-29 years of age) formed the majority of cases while there was a trend towards an increasing average age of patients involved in an accident. Male patients were found to be younger than their female counterparts. Males comprised 81.5% while females formed 18.5% of RTA patients. In terms of inpatient duration, most patients stayed in the hospital for less than 1 week. Vehicle occupants (drivers and passengers) were admitted more often than pedestrians. There was a trend across the years towards an increased involvement of vehicle occupants and decrease in the proportion of pedestrians that had to be hospitalized. Additionally, there was a decrease in the fatalities of pedestrians. Overall, most RTA patients were discharged and made to follow-up in outpatient clinics however there was a startling trend towards increased LAMA and absconded patients. There were both encouraging findings as well as points that needed further emphasis and action. Public education, life support training and diversification of transport (*apart from the use of the roads*) should be looked into, as possible means of improving the current situation.

Thanks