

# Transfusion Reactions

## I. Immediate Reactions (immediately or up to 48 hrs after transfusion)

### A) Immunologic (antigen-antibody rx from RBC, WBC or plasma proteins)

#### 1. Acute Hemolytic PREVENTABLE!

-RBCs destroyed in the recipient during transfusion, caused by incompatibility between recipient's antibodies and donor's RBCs  
-\*\*Incompatibility in ABO blood groups responsible for most deaths in acute hemolytic reaction

-S & S: increased capillary permeability, which leads to dilated vessels and hypotension; DIC, which leads to the formation of thrombi;  
-chills, fever, face flushing, burning sensation of vein used, lumbar/ flank pain, chest pain, shock

-treatment: treat hypotension and promote renal blood flow (ie give volume or volume + Lasix (to increase renal blood flow)

#### 2. Febrile Non-hemolytic

-transfusion of cellular components in the absence of hemolysis (rupture of red cells) where leukocyte antibodies in the recipient are directed against the donor white blood cells

-patients sensitized by numerous transfusions or multiple pregnancies are more likely to develop it.

-\*if have this reaction, may not occur with the next.

-S & S: \*increase of temp. of 1degree within 1-6hour after starting the transfusion

-flushing of face, palpitations, cough, tightness in chest, increased heart rate, chills

-treatment: antipyretics

#### 3. Anaphylactic

-occur in patients who are IgA deficient and who have developed anti-IgA antibodies (IgA = Immunoglobulin A, naturally occurring in blood)

-S & S: Classic!

-\*after a few millimeters of blood or plasma has infused in the absence of fever

-bronchospasm, respiratory distress, abdominal cramps, vascular irritability, shock, LOC

-treatment: resuscitation of patient, and give epinephrine, steroids, etc.

#### 4. Urticaria

-hypersensitivity response.

-treatment: stop the infusion, give antihistamines, then restart

### B) Non-immunologic (no antigen-antibody reaction)

-caused by external factors in the administration of blood (ie bacterial infection of the patient, contamination of the donor blood, improper handling of blood)

#### 1. Circulatory Overload PREVENTABLE!

-blood given too fast leading to hypervolemia

-those prone are the young, the elderly, cardiac/ renal diseased

-S & S: headache, dyspnea, constriction of chest, cyanosis

-treatment: stop transfusion, sit patient up, diuretics, O2. If severe, can do phlebotomy.

#### 2. Air Embolism PREVENTABLE!

-problems greatly improved with plastic IV bags!

-problem caused by faulty changing of equipment

-S & S: cyanosis, dyspnea, shock, cardiac arrest

-treatment: stop transfusion and turn patient on Left side with head down. (This traps air in the Right atrium, preventing it from entering the pulmonary artery.)

#### 3. Hypothermia PREVENTABLE!

-caused by large volumes of cold blood given too quickly

-S & S: chills, peripheral vasoconstriction, ventricular arrhythmia, cardiac arrest

-treatment: warm blood to 37 degrees

#### 4. Bacterial Contamination PREVENTABLE!

- contamination at the time of donation or in the preparation of the component for infusion
- from skin contaminants and cold-resistant Gram negative bacteria (ie Pseudomonas, E. Coli)
- \*\*\*CAN BE FATAL!
  
- S & S: high fever, flushing, renal failure, DIC
  
- treatment: stop the infusion, manage the shock, do cultures, give antibiotics, steroids, etc.

## II. Delayed Reactions

### A. Immunologic

#### 1. Delayed Hemolytic

- seen 1 week or more after transfusions
- S & S: fever, mild jaundice, lower hemoglobin

#### 2. Transfusion-associated Graft-vs-Host Disease

- rare, but FATAL (75-90% mortality)
- transfer of immunocompetant T-lymphocytes to severely immunocompromised patients. (can also get it from 1<sup>st</sup> degree family member)
- occurs 4-30 days after transfusion
  
- S & S: starts with high fever, nausea & vomiting, profuse diarrhea

### B. Non-immunologic

#### 1. Hepatitis

- caused by Hep. B & C virus
- usually resolves in 4-6 weeks
  
- S & S: fever, fatigue, anorexia, dark urine, jaundice....leads to increased liver enzymes and progresses to inflammation of liver, and possibly cirrhosis and cancer of the liver
- \*\*FYI- Hep B virus incubates for 30-180 days!

## 2. Malaria

- almost none in the US or Canada (yeah Canada!)
- increased in the 1980s due to travelers (going to endemic countries to 'find themselves'). It is much lower today.
- diagnosis: organism seen on blood smear, and symptomatic hx
- S & S: biggest symptom is fever!
- treatment: antimalarial prophylaxis
  - \*\*immigrants, refugees and citizens from endemic countries can be blood donors if there are asymptomatic in the US for 3 years

## 3. AIDS

- from the HIV virus
- incubation period > 10 years
- S & S: severely immunodeficient, weight loss, diarrhea, fever, lymphadenopathy, Kaposi Sarcoma

## 4. Syphilis

- almost eradicated in blood by the advent of refrigeration.

### FYI\*\*\*Autologous Transfusion

- collection , filtration & reinfusion of one's own blood
  - pre-op: pre-deposit donation
  - peri-op: hemodilution
  - intra-op: salvage (from suction)
  - post-op: salvage (from suction)