

## Adverse transfusion reactions

### What are the adverse transfusion reaction..?

- An undesirable response or effect in a patient (recipient) associated with the administration of blood or blood components.

### Clinical signs and symptoms of a transfusion complications associated with more than one type of reaction, including:-

-  Fever  $\geq 1^\circ$  C increase or  $>38^\circ$  C
-  Chills/rigors
-  Respiratory distress:- wheezing, coughing, dyspnea, cyanosis
-  Hypertension or hypotension
-  Skin manifestations:- rash.
-  Nausea/vomiting.
-  Oliguria

### - Classification of transfusion reactions:-

- **Immune- mediated reactions** caused by antigenantibody complexes (ABO, Rh incompatibility and minor blood groups) , cytokine release and complement activation.
- **Non immune- mediated reactions** due to the component transfused, the patient's underlying condition, and the method of infusion.

## Acute transfusion reaction

### 1. Hemolytic reaction:-

- Major clinical complications:- DIC, renal failure, irreversible shock, death.
- Causes :- Incorrect labeling of blood samples , Misidentification of sample at blood bank
- Clinical lab tests:- repeat ABO , tests for hemolysis;  $\uparrow$  serum bilirubin.

## 2. Febrile reaction

- Clinically:- present as a temperature rise of 1°C or higher, and can be accompanied by transient hypertension, chills, rigors, and discomfort.

\* Immunological basis:-

-Recipient HLA antibodies to HLA antigens on donor lymphocytes.

- Pro-inflammatory cytokines released by WBCs during blood product storage.

- Causes :- defect in leucofiltration

- Clinical lab tests:- DAT negative.

## 3. Bacterial contamination of blood products (Septic reaction)

- Clinically:- Fever 39°C or more, rigors and hypotension.

- Causes:- improper donor surveillance.

- Clinical lab tests:- Culturing of the blood bag contents and the recipient's blood as well as endotoxin test.

## 4. Allergic ( anaphylactic) reaction

Major clinical complications:- Rash, Shock, loss of consciousness; death.

- Immunological basis:-

-Recipient antibodies to foreign plasma proteins.

-IgA antibody-deficient in recipient

- Causes:-

Defect in plasma separation, storage. Defect in donor and recipient documentation.

- Clinical lab tests:- DAT negative.

## Delayed transfusion reaction

### 1. Hemolytic reaction:-

- Clinically:- may be asymptomatic or similar but milder than an AHTR.
- Clinical lab tests:- DAT—positive; post-transfusion antibody screen— positive; repeat ABO testing.

### 2. Graft-versus-host disease (GvHD)

- Clinically:- Sepsis and hemorrhage; 90% mortality rate.
- Clinical lab tests:- HLA typing to demonstrate a disparity between donor lymphocytes and recipient tissues.

### 3. Citrate toxicity

- Clinically:- hypocalcaemia, parasthesia cardiac arrest.
- Causes:- massive blood transfusion(severe aplastic anemia and myelodysplastic syndromes).