Life since 1978

Life Blood Centre

Scientific Newsletter

42 Years in Blood Transfusion

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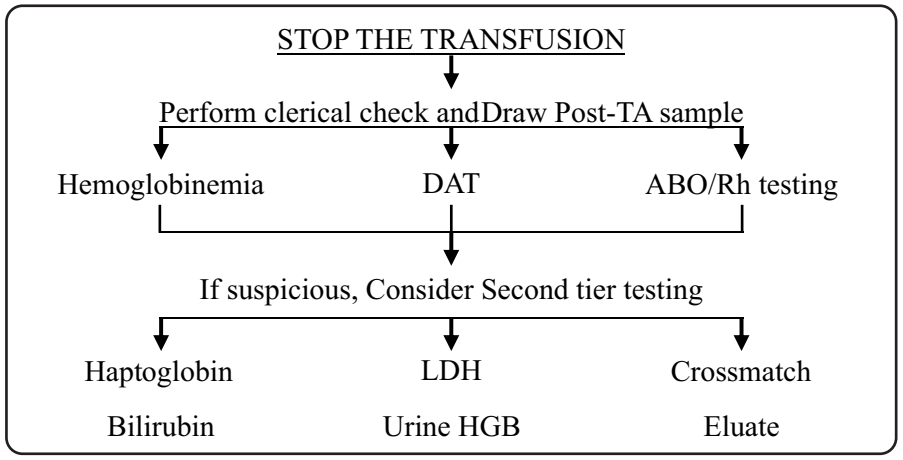
Respected Doctors,

Transfusions still harm, despite great reductions in transfusion-transmitted diseases.

- Suspected Reaction working is indicated whenever a combination of signs/symptoms encountered.

- STOP THE TRANSFUSION !
  a) Don't disconnect the unit (though that will eventually happen), at least stop the incoming flow of blood.
  b) Main indicator of survival of an acute HTR: amount of incompatible blood infused, as a result, the obvious thing to do if you are assuming hemolysis is to stop the transfusion.
  c) Leave the line open with saline.



Transfusion Reaction Workup

ACUTE FEBRILE REACTIONS (during or <24 hrs from transfusion; presenting with fever)

Reaction/*Incidence*	Presentation; *Diagnosis*	Common Mechanism	Treatment	Prevention
Acute Hemolytic (AHTR); *1:76,000, 1 in 1.8 million are fatal*	Fever/chills (most common), back/ flank pain, HGBemia/uria, bleeding, DIC, "doom"; *clerical errors, free HGB, repeat x-match*	ABO-incompatible red cells given to patient (rarely from incompatible plasma hemolyzing patient RBCs)	Pressure and volume support,fluids, diuretics if necessary (urine output >1 mL/Kg/hr); may need PLT/FFP/Cryo if DIC	Careful attention to detail and processes
Febrile Nonhemolytic (FNHTR); *< 1%*	Fever/chills only (>1 C/2°F); *negative workup*	Cytokines (e.g., IL-6, TNF) from unit or recipient; HLA antibodies	Antipyretics;	Leukoreduction. LR/LD
Bacterial Contamination (Septic reaction); *1:3000 PLTS (much fewer reactions)*	**Rapid high fever**, rigors, shock, GI symptoms; *gram stain (50%), culture is conclusive*	Bacteria in donor's blood or through collection site	As for sepsis; antibiotics and pressure support as necessary	Donor Center precautions, possible leukoreduction contribution (LR/LD)
Transfusion-related Acute Lung Injury (TRALI); *1:1300-1:190,000 (obviously, unclear)*	Acute lung injury ≤ 6 hours after transfusion. Bilateral CXR infiltrates, hypoxemia. No cardiac dysfunction. *Difficult; donor HLA/ HNA abs, consensus criteria*	1. Transfused anti-HLA and/or anti-HNA Abs activate PMNs or 2. Lung endothelial and PMN priming by physiologic stress, then activation by blood substances	Aggressive supportive care (may include intubation); most resolve but close to 20% fatal	Don't transfuse! Preferential male plasma use for decreased HLA/HNA antibodies. HLA antibody screening of female PLT donors. If + antibodies in implicated donor, donor should be deferred.

ACUTE AFEBRILE REACTIONS (during or <24 hrs from transfusion; presenting without fever)

Reaction	Presentation/*Diagnosis*	Common Mechanism	Treatment	Prevention
Urticarial (mild allergic reaction); *1-3%*	Localized or diffuse hives/redness; *if localized, no workup necessary*	IgE-mediated hypersensitivity to transfused protein	Antihistamines	Pretransfusion antihistamine;
Anaphylactic/-oid (severe allergic reaction); *1:20,000-50,000*	Severe hypotension very early in transfusion, GI symptoms, rare fever; *anti-IgA, check IgA levels*	Recipient IgA deficiency with anti- IgA antibodies, haptoglobin deficiency, latex or PCN allergy	Epinephrine (0.2-0.5 mL of 1:1000 given IM or SC; use IV if necessary), pressure support	IgA deficient donor - derived products
Transfusion associated circulatory overload (TACO); *1:350-5000 reported*	Dyspnea, hypoxia during or after transfusion; *+/- elevated BNP, JVD, hypertension*	Cardiopulmonary disease with too rapid blood infusion; very old and very young most at risk	Diuretics, slow infusion	Divide products into aliquots, slow infusion, monitor I/O's
Premedicated Febrile	Chills; occurs in premedicated pts	As for FNHTR; fever is blocked	N/A	As for febrile nonhemolytic

DELAYED FEBRILE REACTIONS (>24 hrs from transfusion; presenting with fever)

Reaction	Presentation/*Diagnosis*	Common Mechanism	Treatment	Prevention
Delayed Hemolytic (DHTR); *1:2500-11,000*	Fever, anemia $\geq$ 1 week after transfusion; *+DAT, hyperbili, new antibody (Jk, Fy, K especially)*	Anamnestic response to re- exposure to red cell antigen;	Supportive; as for acute hemolytic if severe	Previous records (honor previous antibodies), patient history, some use ID tags/cards
TA-GVHD; *Risk varies widely by locale, but is generally rare*	Fever, diarrhea, skin rash 7-10 days post transfusion; *skin biopsy, bone marrow, flow cytometry, molecular*	Cellular immune response by transfused T-lymphocytes vs host	Supportive, immunosuppress; usually in vain (>90%fatal)	Irradiation of cellular products transfused to at - risk recipients

DELAYED AFEBRILE REACTIONS (>24 hrs from transfusion; presenting without fever)

Reaction	Presentation/*Diagnosis*	Common Mechanism	Treatment	Prevention
Post-transfusion Purpura (PTP); *rare*	Dec PLTS +/- bleeding 1 week after transfusion (RBCs +/- PLTs); *clinical dx, platelet antibodies*	Recipient antibody vs. absent PLT antigen (HPA - 1a 70%)	IVIG 1st choice, plasma exchange second; avoid platelet transfusion	Antigen-negative platelet transfusions if necessary
Iron Overload; *typically after >100 units received*	Liver, pancreas, cardiac dysfx; *serum iron/ferritin, LFTs*	Iron deposition from multiple Tx	Iron chelators	Judicious transfusion

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