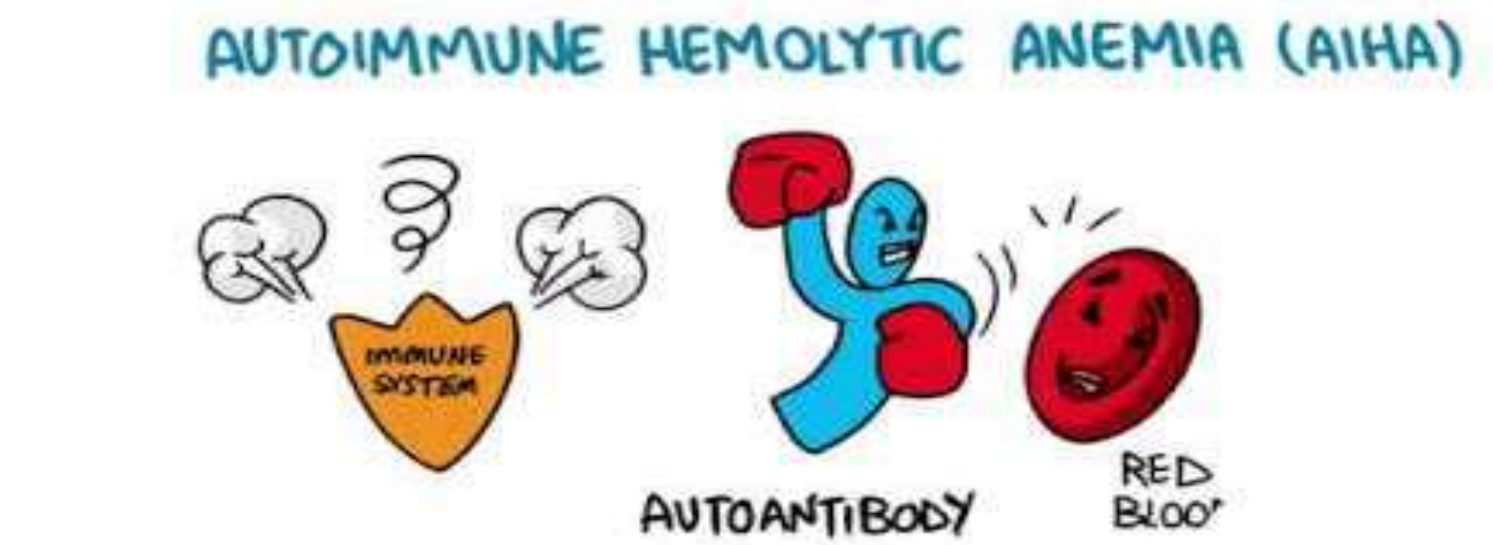
AIHA
(Autoimmune Hemolytic Anemia)



By ABDUL MUIN

WHAT IT IS AIHA?

- Technically, it is an antibody-induced erythrocyte destruction. The patient's own antibodies are directed against antigens on their own red blood cells resulting in hemolysis and anemia.

- HOWEVER!!! Hemolytic anemia due to enzymes deficiency (i.e G6PD) or nephrotic syndromes should not be confused for AIHA.

SO HOW TO DIFFERENTIATE?

- Others Immune/lack of enzyme-Mediated Hemolysis will have NEGATIVE result for DAT (Direct Antiglobulin Test) while a true AIHA situation will have a POSITIVE DAT result.

- There are some medications that can produce POSITIVE DAT result (i.e Daratumumab). Be sure to check with patient's medication record to eliminate the posibility of reporting false positive AIHA.

How many types are there?

- Basically divided into:

Warm (≥ 37°C) - predominately IgG + complement

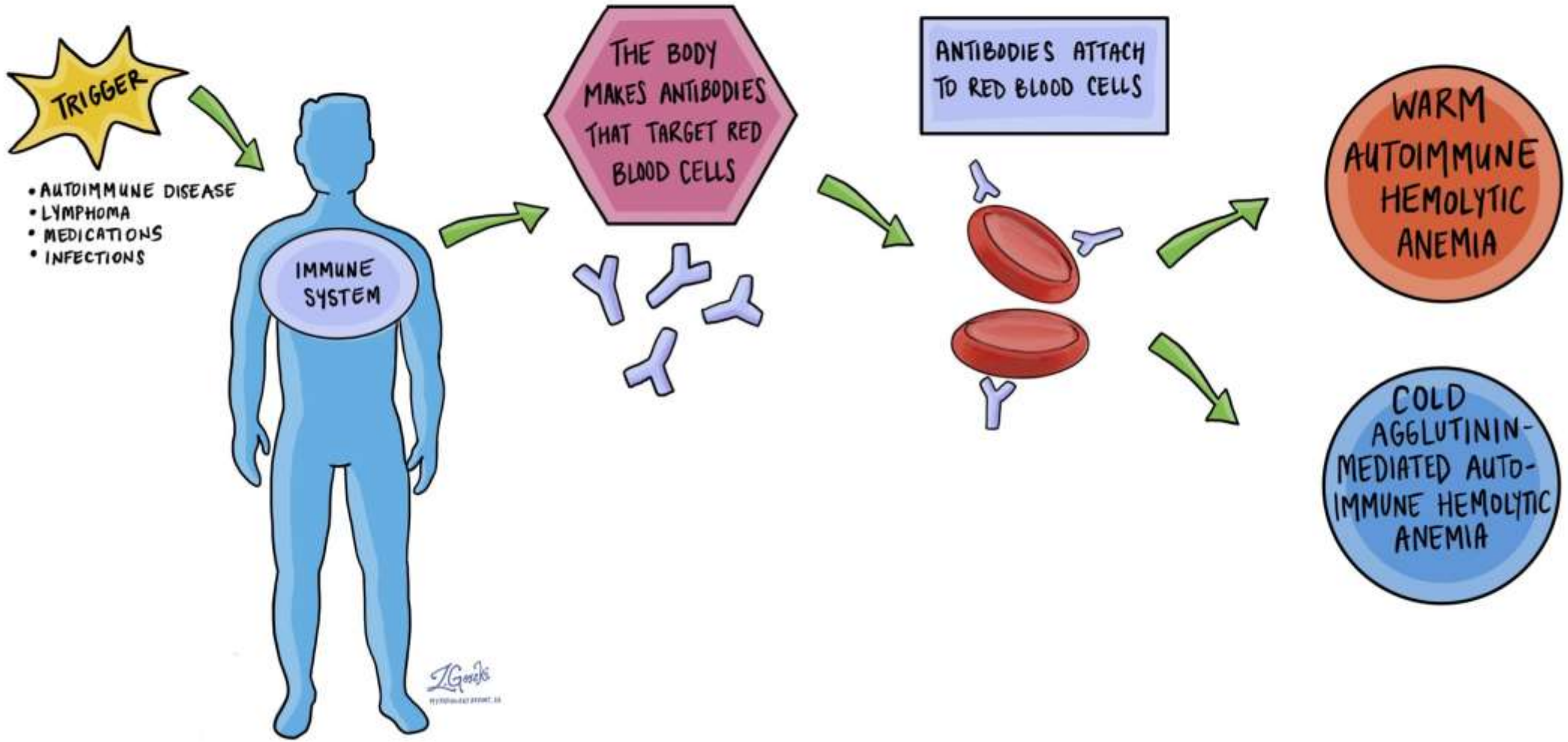
Cold (< 37°C) - predominately IgM + complement

- anti-i and anti-I are the most common specific cold autoantibodies

- So incubate your AUTO CONTROL at 37°C and lower to identify your patient's type of AIHA. Or you just may observe the RBCs agglutination at Room Temperature.

- AUTO CONTROL is a crossmatch between patient's own red cell against their own plasma/serum.

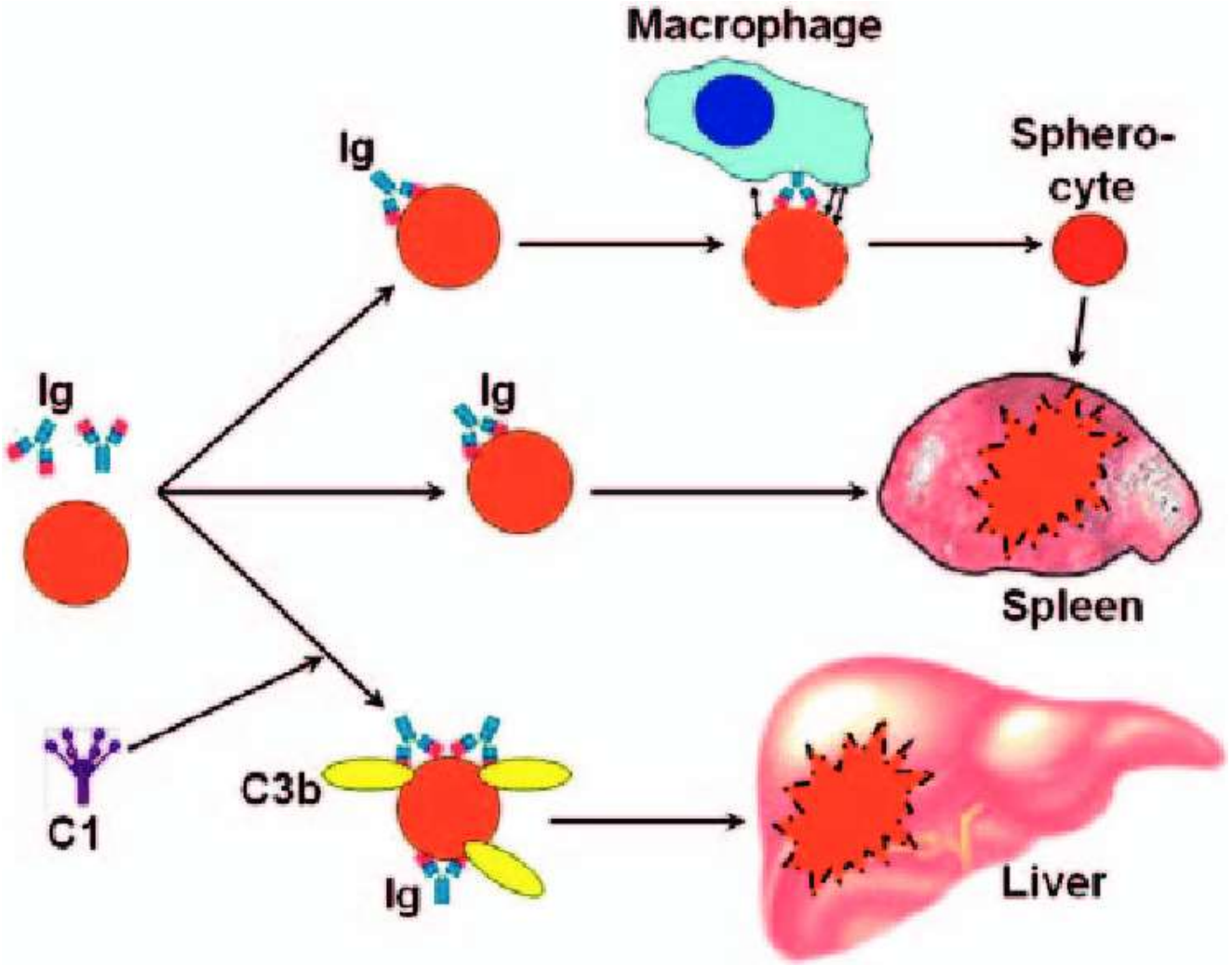
IMMUNE HEMOLYSIS



Diagnostic

Investigations	Cold AIHA	Warm AIHA
DAT	IgG negative and C3 positive	IgG typically positive, C3 positive or negative
Crossmatch	Easier to find compatible blood	Difficult to find compatible blood
Peripheral Blood Smear	marked agglutination of RBCs	abundant spherocytes

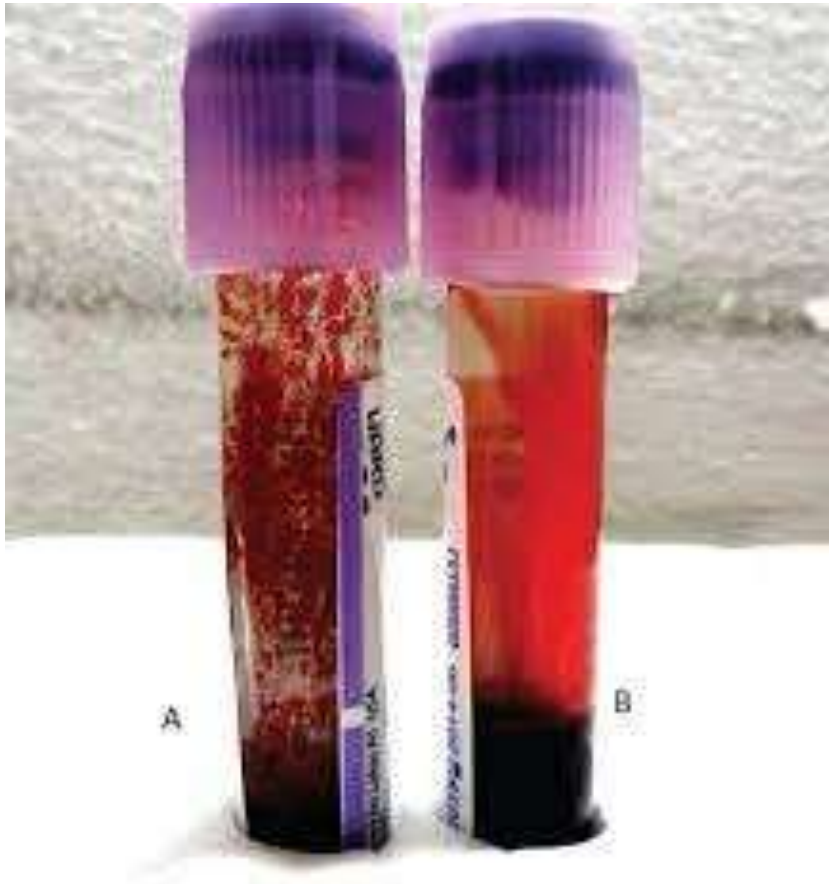
WARM AIHA

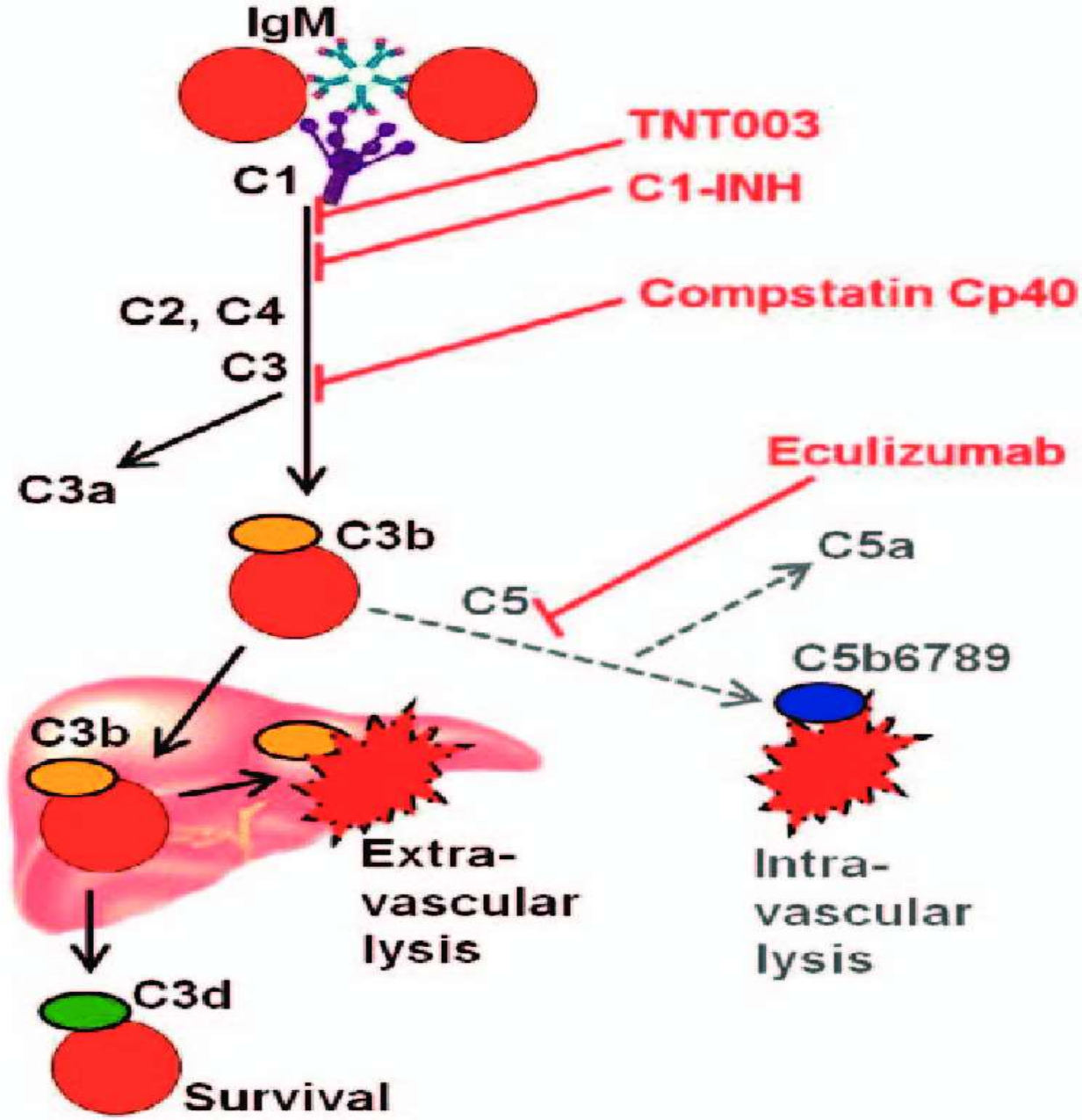


Warm AIHA

- Heat-sensitive antibodies, mostly polyclonal IgG antibodies that first bind to multiple RBC antigens then to Fc receptors on phagocytes.
- IgG antibodies bind to complement components less readily than IgM antibodies and, therefore, cause little or no intravascular hemolysis.
- But, IgG antibodies also act as opsonins, which mark RBCs as targets for destruction by macrophages in the reticuloendothelial system.
- Binding of the antibodies leads to ↑ extravascular hemolysis mediated by the reticuloendothelial system of the spleen and liver.

COLD AIHA


A
B


IgM
C1
TNT003
C1-INH
Compstatin Cp40
C2, C4
C3
C3a
Eculizumab
C3b
C5a
C5
C5b6789
C3b
Extra-
vascular
lysis
Intra-
vascular
lysis
C3d
Survival

Cold AIHA

- Cold-sensitive antibodies (cold agglutinins): mostly IgM antibodies cause extravascular hemolysis and acute intravascular hemolysis

- Intravascular hemolysis is mediated through the complement system which is activated by IgM antibodies bound to RBCs

- That’s why you may observe agglutination of RBCs right after blood samples withdrew from patient with COLD AIHA.

HOW TO PROCEED WITH THE CROSSMATCH?

- When patient's own antibodies are against their own red blood cells, it is expected to see wide ranges of incompatibility grading from the crossmatch results with large number of donors.

- BUT FIRST, you have to find out which types of AIHA the patient is having now.

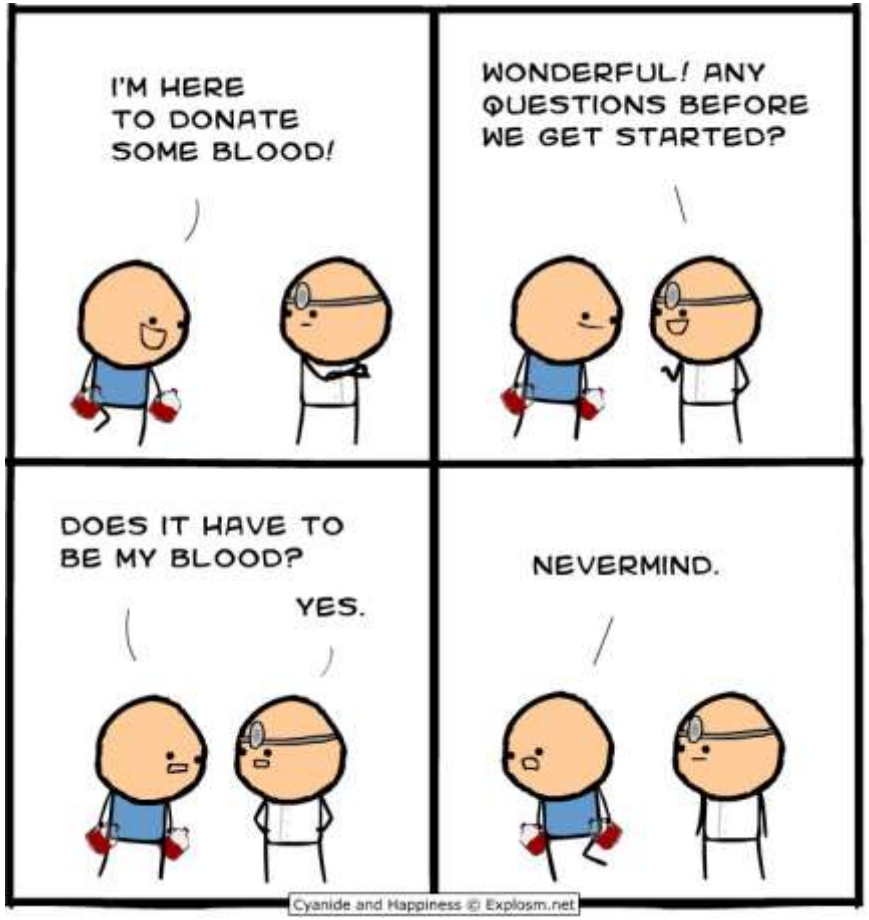
WARM AIHA

- Crossmatch as usual
- Look for least incompatible blood bag
- The reaction grading should not be more than Auto Control grading
- Consult the Hematologist who is handling the case for approval of tranfusion with that least incompatible bag.

COLD AIHA

- pre warm all donor cell suspension, patient’s plasma and CAT gel card at 37°C
- Crossmatch as usual
- Look for least incompatible blood bag
- The reaction grading should not be more than Auto Control grading
- Consult the Hematologist who is handling the case for approval of tranfusion with that least incompatible bag

THE END


I'M HERE TO DONATE SOME BLOOD!
WONDERFUL! ANY QUESTIONS BEFORE WE GET STARTED?
DOES IT HAVE TO BE MY BLOOD?
YES.
NEVERMIND.
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