

Blood grouping

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- Immune hemolytic anemia:

It's a group of disorders where the immune system destroys RBCs prematurely, resulting in Anemia, this destruction is Antibody-Mediated, meaning the body's Immune system targets its own or foreign RBCs thru antibodies

Immune hemolytic anemia

3 Main Categories:

Autoimmune hemolytic anemia

Type II hypersensitivity reaction, where antibodies (IgG or IgM) are directed Against the body's own RBC's

IgG warm 37°C

IgM cold 23°C

- Drug induced hemolytic anemia
- Alloimmune hemolytic anemia

* Warm Autoimmune hemolytic anemia

IgG-Mediated

* leads to extravascular hemolysis
primarily spleen

* IgM activates complement
leading to intravascular hemolysis

* Cold AIHA

IgM-Mediated

Binds to cooler parts of the body
- around (23°C)

Alloimmune Hemolytic Anemia

- Hemolytic disease of the newborn

Rh Disease severe Rhesus

ABO incompatibility "the most common"

- Transfusion Reactions

when incompatible blood is transfused, the recipient immune system attacks donor RBCs

* There are hundreds of antigens on RBC surface

→ molecule capable of inducing immune response → produce antibodies

ABO Blood group system

Determined by the presence or Absence of A + B antigens on RBCs
Individuals naturally have IgM antibodies against the antigens they don't have.

Blood Type	Antigens on RBCs	Antibodies in plasma	Can receive from
A	A	Anti-B	A, O
B	B	Anti-A	B, O
AB	A, B	none	All
O	none	Anti-A Anti-B	O

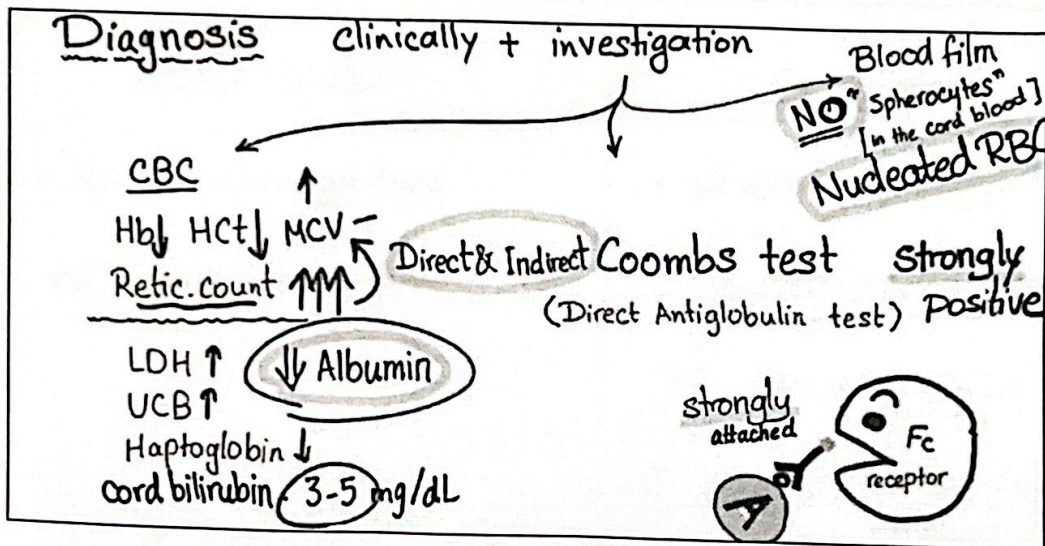
RH System (esp. D Antigen)

RH^+ = has D Antigen

* Anti-D antibodies are IgG $\rightarrow$ Can cross placenta

RH^- = no D Antigen

* It only becomes a problem after sensitization, usually from:
 $\Rightarrow$ previous RH^+ pregnancy
 $\Rightarrow$ Blood transfusion with RH^+ blood



Direct Coombs test
 Detect antibodies or complements bound to patient's RBCs
 used in
 AIHA, HDN

Indirect Coombs test
 Detects free antibodies in patient's serum
 prenatal test of Rh- mothers
 Cross-match before transfusion

