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Understanding Autoimmune Hemolytic Anemia: Pathophysiology and Classification

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ABSTRACT

Autoimmune hemolytic anemia (AHAI) is acquired extra corpuscular hemolysis caused by auto antibodies directed against red blood cells (RBCs). These auto antibodies are present on RBCs. and / or in plasma. And they are often directed against high incidence antigens.

The AHAI is not rare and 2/3 of disease is seen in women.

There are 03 types of antibodies:

Warm-antibody type: The auto antibodies in warm AIHA have temperature optimum at 37°C and they are of the immunoglobulin G (IgG) class in most cases, IgA auto antibodies occur in 15-20% of the patients.

Cold-antibody type: observed in cold agglutinin disease (CAD). The auto antibodies in cold AIHA have temperature optimum of 3-4°C .More than 90% of pathogenic CA are of the IgM class.

Paroxysmal cold hemoglobinuria.

Mixed warm- and cold-antibody AIHA is very rare.

- Acute AHAIs are generally post-infectious, most often viral and chronic AHAI are often observed following autoimmune pathologies as malignant lymphoid proliferation.

Several mechanisms are involved in AIHA we can cite:

-Similarities in structures between some antigen of the erythrocyte membrane and other antigens introduced into the body would lead to a cross-immune response like Mycoplasma pneumoniae pneumonia and antigen I.

-Dysregulation of the immune system: deficit in regulatory lymphocytes (Alpha methyl dopa can block suppressor T cells and thus cause AHAI).

-Activation of autoreactive cells.

-Family forms: Some class II of major histocompatibility complex (MHC) HLA-DQB1 and HLADRB1.

The mechanism of hemolysis depends on the type of antibody, we can see: IgG dependent erythrophagocytosis, complement dependent erythrophagocytosis and complete intravascular hemolysis, here the antibody can activate completely the classic pathway of complement .

-A better knowledge of the pathophysiology, allows to adapt the appropriate therapeutic protocol.

Keywords: Hemolysis , Autoantibodies, Warm, Cold, Complement

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