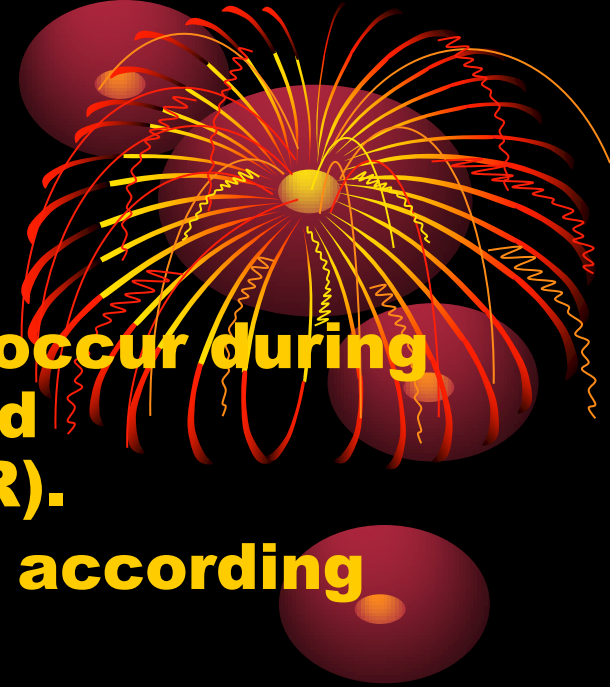


Hypersensitivity Reactions



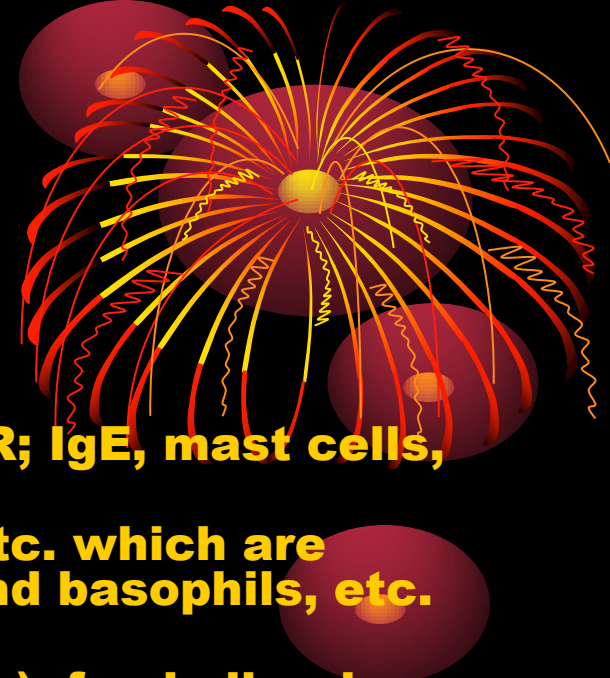
- **Body-damaging reactions that occur during the immune response are called hypersensitivity reactions (HSR).**
- **ADR is divided into four groups according to formation mechanisms.**
- **- Type I-TypeII and TypeIII HSR; humoral immunity (antibodies) and develops in a short time.**
- **- Type IV HSR; related to cellular immunity (T lymphocytes) and develops longer**

TYPE I HYPERSENSITIVITY REACTIONS

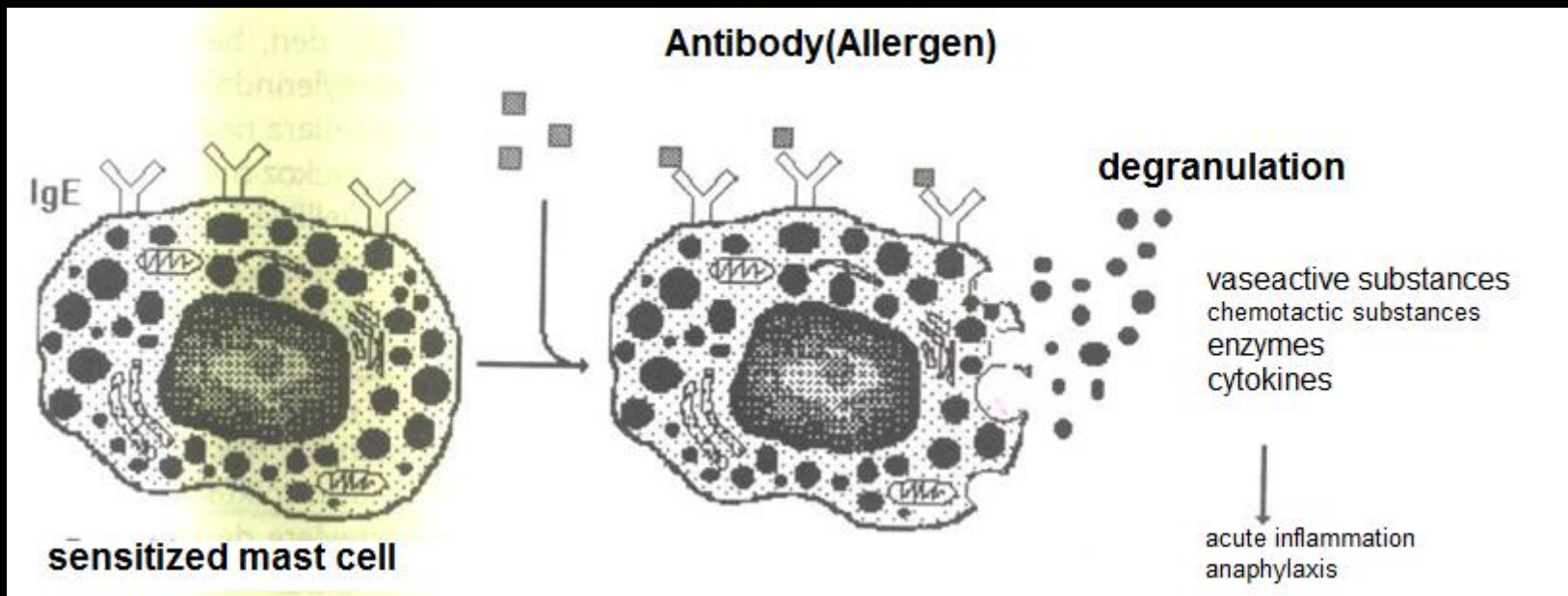


- **Early type HSR (allergy); develops very fast**
- **Allergen; antigens causing early type HSR (plant pollen, poisons insect and arthropod antigens)**
- **Anaphylaxis; systemic and severe Type I HSR**
- **Anaphylactic shock; Anaphylaxis occurring within minutes**
- **Atopy; continuous and excessive production of IgE in some individuals**
- **atopic; individuals who produce continuous and excessive amounts of IgE**

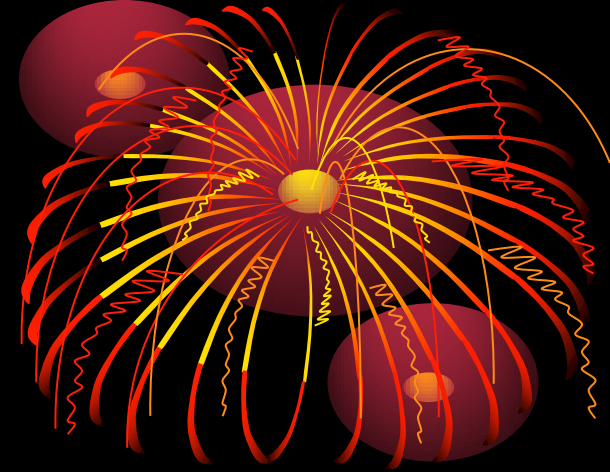
TYPE I HYPERSENSITIVITY REACTIONS



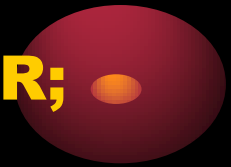
- **Cells and molecules involved in Type I HSR; IgE, mast cells, basophils**
- **Vasoactive agents, histamine, serotonin etc. which are released from the stimulated mast cells and basophils, etc. substances.**
- **Anaphylaxis, inhalation allergies (hay fever), food allergies, parasitic allergies, vaccine and drug allergies**



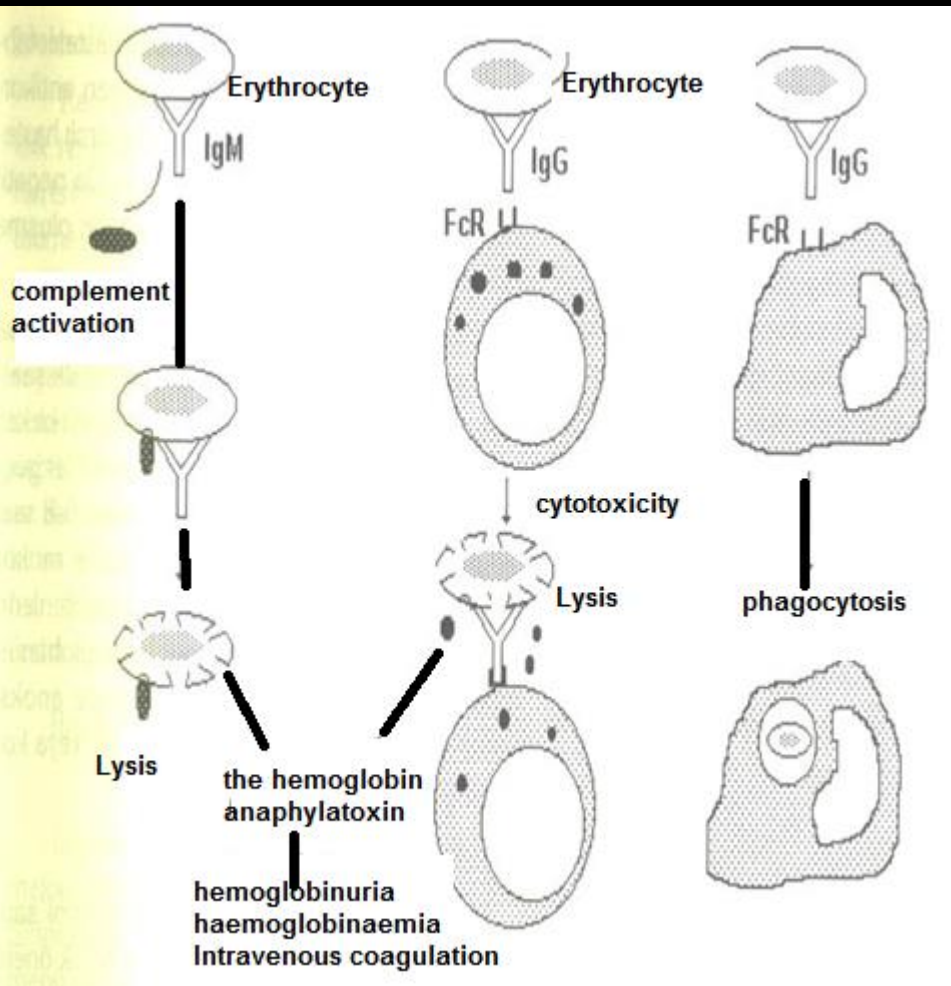
TYPE II HYPERSENSITIVITY REACTIONS



- **Hemolytic type or cytotoxic type HSR**
- **Cells and molecules involved in Type II HSR; foreign erythrocytes, IgM and IgG**
- **It develops in blood transfusions, blood conflicts of newborns, some drugs and microorganisms,**
- **Blood group antigens (eg 11 in cattle and dogs, 7 in horses, 6 in sheep)**
- **Heterophile antigen; antigens found in various plants, bacteria and parasites and cross-reacting with erythrocyte antigens**



TYPE II HYPERSENSITIVITY REACTIONS

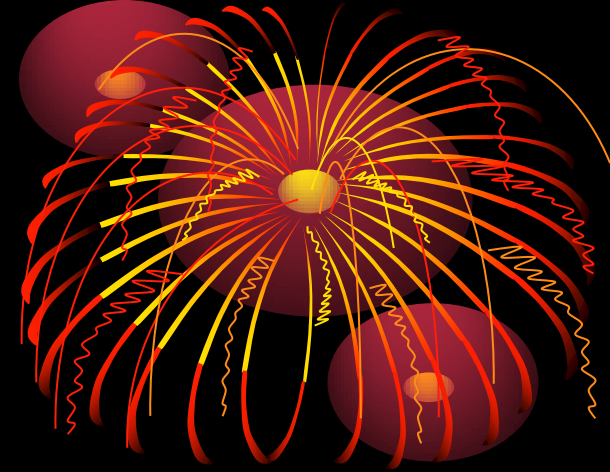


In blood conflicts; In the first blood transfusion IgM and IgG against foreign erythrocyte antigens occur. Subsequent blood transfusions result in type II HSR.

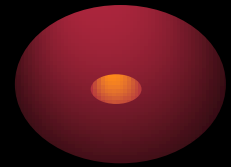
Clinical symptoms of type II HSR; hypotension, bradycardia, dyspnea, sweating, diarrhea, vomiting...

Hemolytic disease of newborns; father and mother erythrocyte antigens are different, fetus blood reaches the mother by placental way to the mother is formed as a result of the colostrum antibodies to the offspring

TYPE III HYPERSENSITIVITY REACTIONS

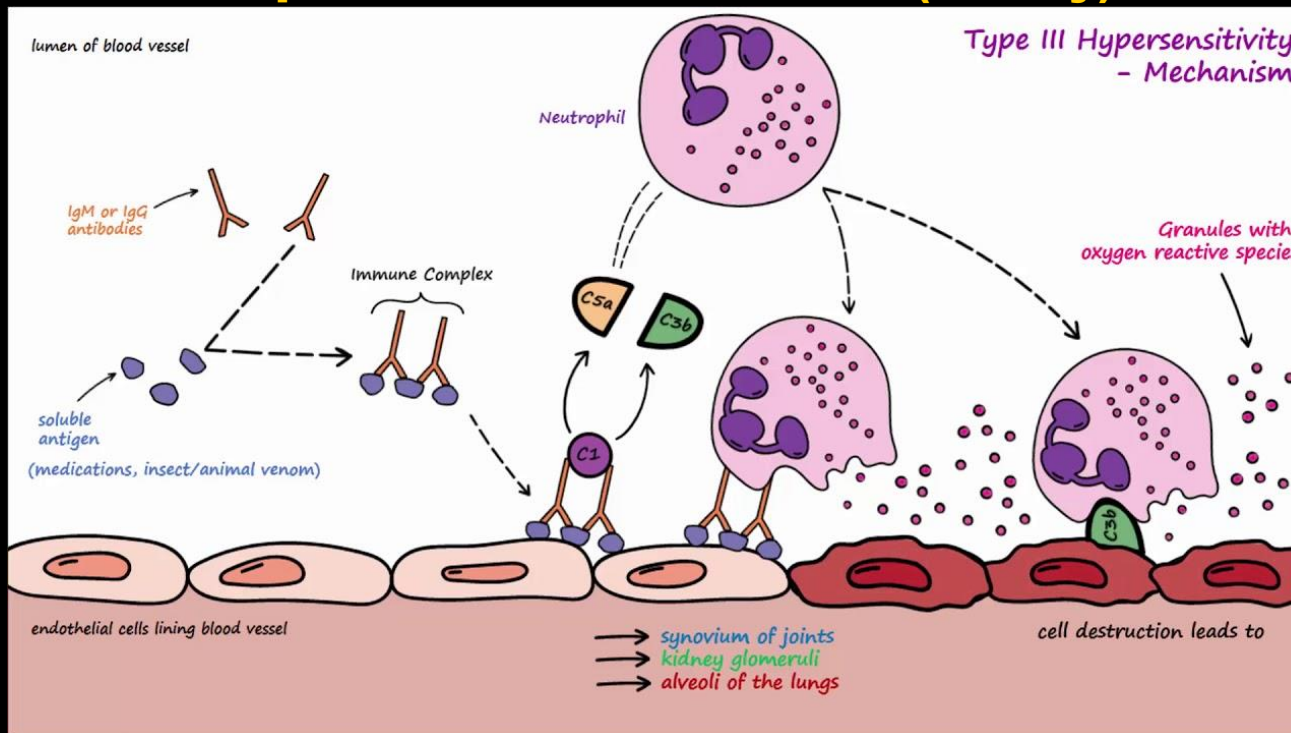


- **Immune complex type HSR**
- **It occurs against microbial antigens or against autoantigens,**
- **The most important result of immune complex formation is complement activation,**
- **Type III HSR is local or generalized.**

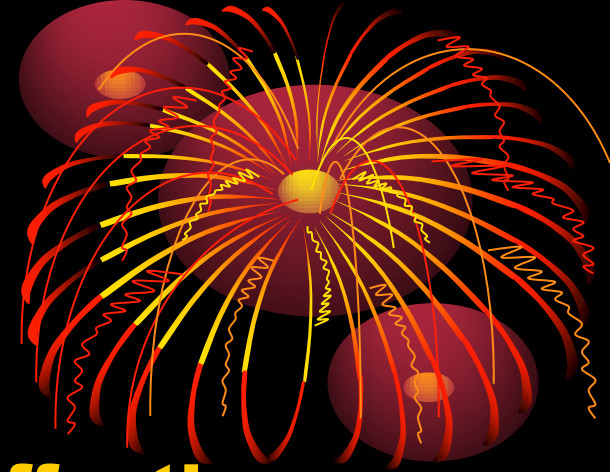


TYPE III HYPERSENSITIVITY REACTIONS

- **Antigen-antibody reaction**
- **Complement addition and activation to the antigen-antibody complex**
- **Release of chemotactic factors by complement**
- **Infiltration and inflammation of neutrophils by chemotactic factors**
- **Circulating immune complex formation-generalized reaction**
- **Immune complex formation in tissues (kidney)-local reaction**



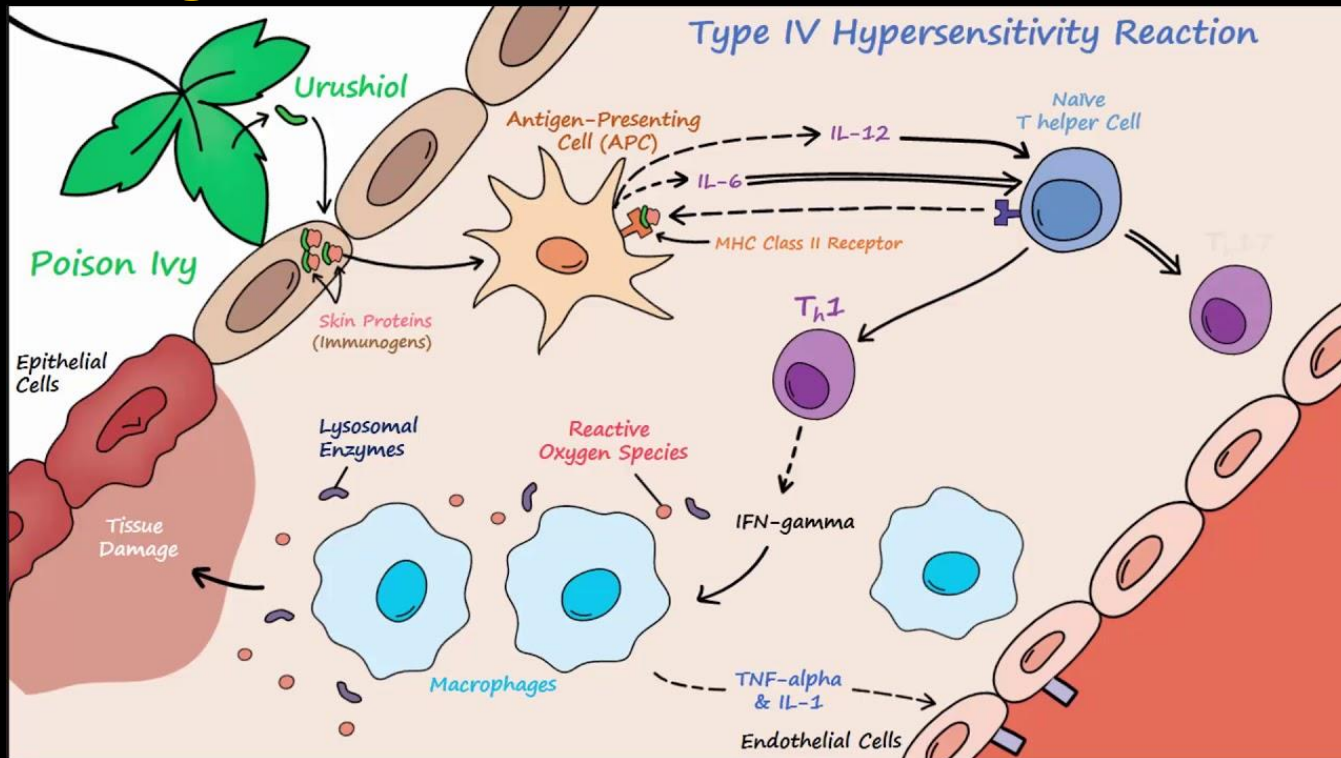
TYPE IV HYPERSENSITIVITY REACTIONS

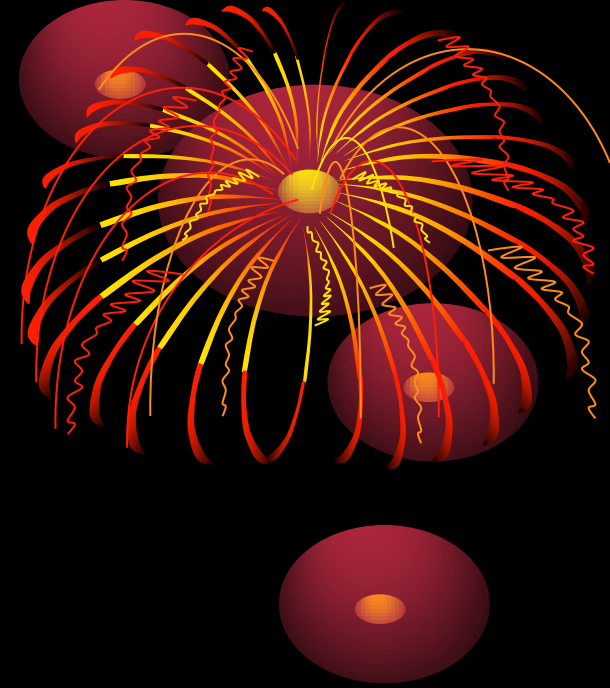


- **Delayed HSR**
- **Cellular immune reactions are effective,**
- **Cells and molecules involved in the reaction; antigen processing and presenting cells, T-lymphocytes, inflammation cells, cytokines,**
- **Type IV HSR; It occurs in chronic infections caused by intracellular bacteria and fungi, protozoon infections, contact dermatitis and some autoimmune diseases,**
- **The most typical example of Type IV HSR is the Tuberculin reaction. The tuberculin skin test is used to diagnose tuberculosis disease.**

TYPE IV HYPERSENSITIVITY REACTIONS

- In tuberculosis infection, susceptible (memory) Th cells remain in the body for many years. Regardless of the way the antigen enters the body again, susceptible Th cells are activated and type IV HSR begins.





**Have a Good Semester Break,
Wish You Luck in Your Exams!**