

TOPIC: REVIEWING THE 4 TYPES OF HYPERSENSITIVITIES

Reviewing the 4 types of hypersensitivities

	Type I	Type II	Type III	Type IV
Type of Response (_____)	Allergic reaction	Cytotoxic	Immune complex-mediated	Delayed T cell-mediated
Examples	Allergic reactions (hay fever, food allergies, etc.)	Hemolytic transfusion reaction, hemolytic disease of the newborn	Rheumatoid arthritis, glomerulonephritis	Contact dermatitis, tuberculin skin test, type I diabetes, transplant rejection
Immune Reactant	Ig_____	IgG or IgM	IgG & IgM	____-cells
Time to Respond	Immediate (\leq ~30 min)	Variable	Variable	Delayed: ~24-72 hours
Antigen Form	Soluble allergen	Cell-bound or in extracellular matrix	Soluble. Within small _____ complex	Soluble or cell-bound
Mechanism	Allergen-specific IgE antibodies bind to mast cells, inducing degranulation.	IgG/IgM antibody binds to antigen on cells or in matrix, killing cells or impacting receptors.	Small Immune complex deposits in tissues, activates complement system \rightarrow inflammation.	Sensitized T cells recognize antigen & promote inflammation.

EXAMPLE

Match the types of hypersensitivities to their correct characteristic (one of the options will be used twice).

- a) Type I. b) Type II. c) Type III. d) Type IV.

1	_____	Reaction is a T cell-mediated delayed response occurring hours to days after antigen exposure.
2	_____	Can result in the release of pro-inflammatory mediators into blood stream & a severe systemic reaction.
3	_____	Reaction results in membrane attack complexes forming and lysing foreign cells.
4	_____	Triggered by small immune complexes settling in the tissues and resulting in inflammation.
5	_____	Responsible for skin reactions like contact dermatitis & indurations.

TOPIC: REVIEWING THE 4 TYPES OF HYPERSENSITIVITIES

PRACTICE

Which of the following statements about the four types of hypersensitivity is true?

- a) They all involve activation of the complement system.
- b) In most cases they occur upon second exposure to an antigen (after sensitization upon first exposure).
- c) They are all caused by foreign antigens only.
- d) Hypersensitivities increase in severity from type I up to type IV.

PRACTICE

Which type of hypersensitivity involves the production of naturally forming M class antibodies that trigger immune reactions to foreign cells?

- | | | |
|------------------|-------------------|------------------------|
| a) Type I only. | c) Types I & II. | e) Type I & III only. |
| b) Type II only. | d) Type III only. | f) Type II & III only. |