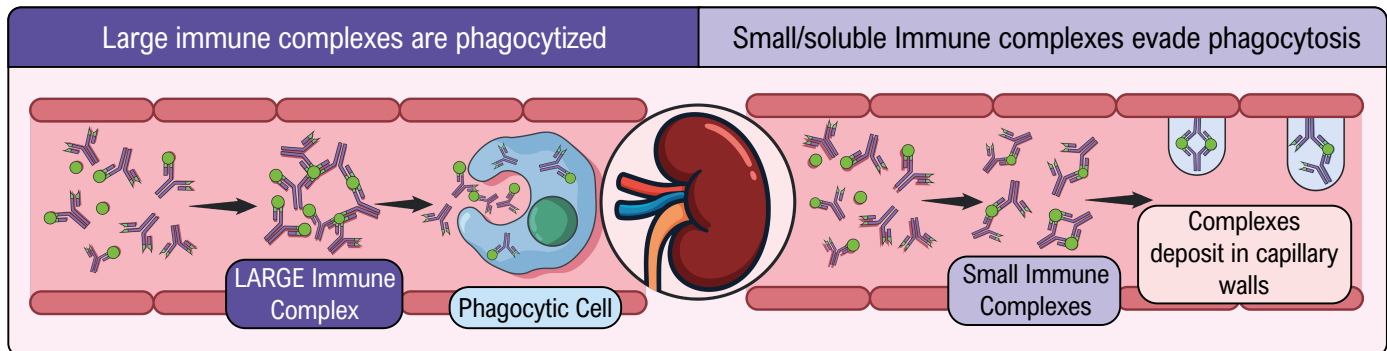


TOPIC: TYPE III HYPERSENSITIVITIES

Type III Hypersensitivity

- ◆ **Type III (Immune Complex-Mediated) Hypersensitivity:** tissue damage initiated by _____ complexes.
 - **Immune complex:** cluster of *antibodies* bound to *antigens* (only forms with certain antibody-antigen *ratios*).
 - If large, they're *removed* by phagocytes, BUT if _____ & soluble, they *circulate* in blood & *lodge* in tissues.
 - Can _____ the complement system triggering *inflammation & damaging* tissues/organs.



PRACTICE

Type III hypersensitivity is caused by the immune system's reaction to immune complexes. Immune complexes are made of aggregates of which of the following?

- Immunoheamagglutinins and foreign RBCs.
- AB antigens and Rh antigens found in RBCs.
- Antigens bound to antibodies in tissues and blood.
- Multiple complement system proteins binding to form a membrane attack complex.

PRACTICE

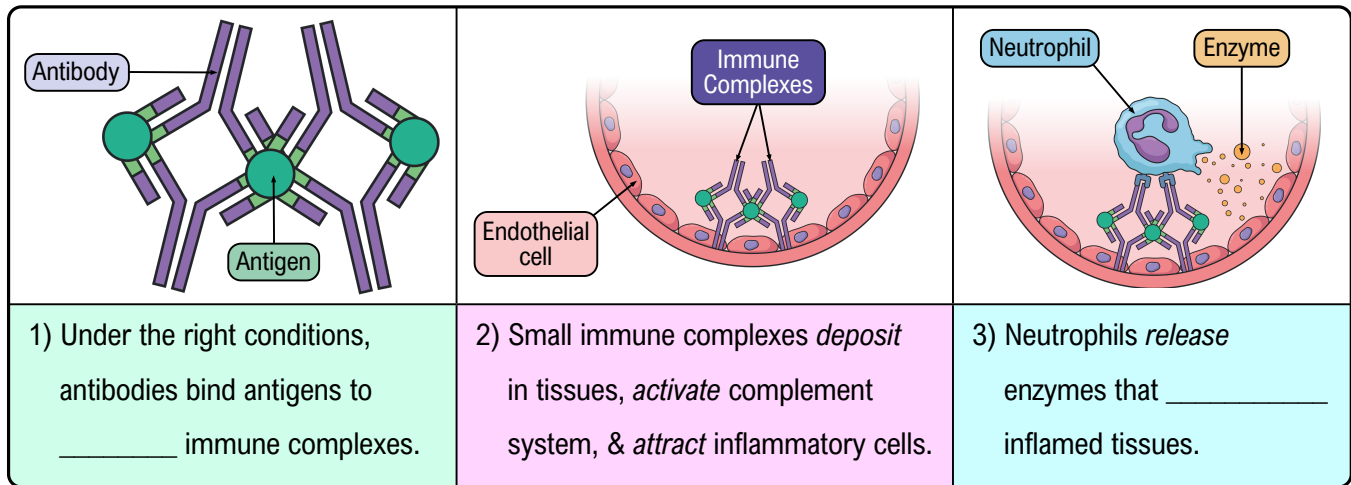
Why are small immune complexes damaging to the body?

- They can enter endothelial cells & damage them from the inside.
- They often "clump" together in blood vessels, which can lead to blood clots.
- They can weaken our immune system by damaging phagocytes.
- They can escape phagocytosis, deposit in tissues/between cells, & cause a damaging inflammatory response.

TOPIC: TYPE III HYPERSENSITIVITIES

Steps of Immune Complex-Mediated Hypersensitivity

◆ Type III hypersensitivities can be described in ____ steps:



EXAMPLE

Correctly order the following steps (1-5) that occur during a type III hypersensitivity reaction:

Small immune complexes deposit in tissues and activate the complement system	_____
Small immune complexes form in the presence of soluble antigens in the blood	_____
Neutrophils recruited to small immune complexes damage surrounding tissues with hydrolytic enzymes	_____
Small immune complexes evade phagocytosis & circulate in the blood	_____
Complement activation recruits neutrophils to the site of inflammation	_____






PRACTICE

Which of the following statements about immune complexes is false regarding hypersensitivity reactions?

- Small immune complexes that evade phagocytosis are more problematic than large immune complexes.
- Immune complexes are often removed from the body by phagocytosis.
- Immune complexes directly damage tissues & cells by releasing hydrolytic enzymes.
- Immune complexes are an aggregate of antibodies bound to antigens.

TOPIC: TYPE III HYPERSENSITIVITIES

Examples of Disorders Caused by Type III Hypersensitivities

Disorder	Description/Features
Glomerulonephritis* 	Inflammation of glomeruli (part of kidneys). If immune complex forms with self-antigens, it is also considered an autoimmune disorder.
Arthus Reaction 	_____ type III hypersensitivity caused by a <i>foreign</i> antigen. Usually caused by injections (e.g. booster vaccines, anti-venoms).
Serum Sickness 	_____, more severe version of an Arthus reaction (immune complexes form in blood).
Rheumatoid Arthritis* 	_____ inflammation caused by deposited immune complexes.
Systemic Lupus Erythematosus (____)* 	Autoantibodies against many self-antigens, especially nuclear components. DNA released from dead cells forms immune complexes.

Organ-specific

Systemic

*Autoimmune disorders.

PRACTICE

Which of the following is a type III hypersensitivity involving immune complexes against DNA that damage multiple organs?

- a) Rheumatoid arthritis.
- b) Systemic lupus erythematosus (SLE).
- c) Glomerulonephritis.
- d) Arthus reactions.