

Immune complex-mediated (Type III) Hypersensitivity

Learning objectives: At the end of lecture, The students should be able to:

- 1-Define immune complex-mediated (Type III) Hypersensitivity.
- 2-Mention the types of immune complex.
- 3-Mention the types of antigens that cause immune complex-mediated injury.
- 4-Enumerate the types of immune complex-mediated disease.
- 5-Identify the phases of systemic immune complex-mediated disease.
- 6-Enumerate the factors that influence immune complex deposition.
- 7- Describe the histopathological features of immune complex injury.
- 8-Discuss the pathogenesis of local immune complex disease (Arthus reaction)

Immune complex-mediated (Type III) Hypersensitivity

- Definition of immune complex-mediated (Type III) hypersensitivity.
- Examples.

Immune complex

*Types of immune complex

1-Circulating immune complex(e.g. acute serum sickness).

2-In situ immune complex(e.g. form of glomerulonephritis).

Antigens of immune complex-mediated Hypersensitivity

-Types of antigens:

- 1- Exogenous antigens(such as foreign protein, bacteria, and viruses).
- 2-Endogenous antigens (self antigens).

Immune complex-mediated disease

-Types :

- 1- Generalized(systemic) immune complex disease (such as acute serum sickness).
- 2- Local immune complex disease(Arthus reaction) (e.g. glomerulonephritis, and arthritis).

Phases of systemic immune complex-mediated disease

-Phases:

- 1-Formation of antigen-antibody complex in the circulation.
- 2-Deposition of the immune complexes in various tissues.
- 3- An inflammatory reaction at sites of immune complex deposition.

Factors influence immune complex deposition

-Factors:

1-Size of immune complex.

*Small-sized immune complex.

*Intermediate-sized immune complex.

*large-sized immune complex.

2-Functional status of the mononuclear phagocyte system.

3-Others:

-Charge of the immune complexes(anionic versus cationic)

-Valency of antigens.

-Avidity of the antibodies.

-Affinity of the antigen to various tissue component.

-Lattice(Three-dimensional structure of the complexes.

-Hemodynamic factors.

Histopathological features of immune complex injury

-Histopathological features:

- 1- Necrotizing vasculitis.
- 2- Infiltration of neutrophils.
- 3- Fibrinoid necrosis.

Local immune complex disease(Arthus reaction)

- Definition.
- Mechanism.

Morphological changes(Arthus reaction)

-Morphological changes:

1-Necrosis.

2-Inflammatory reaction.

Questions

- 1-Discuss the mechanism Of acute serum sickness.
- 2-Explain the mechanism of poststreptococcal glomerulonephritis.
- 3-Draw by arrows the pathogenesis of immune complex-mediated tissue injury.
- 4-Write short notes on of serum sickness(History and pathology)

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- _____
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- 3-Rosal J. (Ackerman's surgical pathology); 9th edition.Mosby.2003.
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- 5-Krishna V.(Text book of pathology);Orient Longman Private limited. 2004 .