

Classify the hypersensitivity reactions, give an example for each reaction and describe the pathophysiological processes of each reaction

Hypersensitivity is an immune reaction to an environmental or drug antigen causes damage and inflammation to the body itself.

May be classified as either delayed or immediate

Aim is to identify IgE mediated processes which are mostly <1hr

Traditional classification by Coombs and Gell (1958)

**Table 54.4** Classification of hypersensitivity reactions

Type	Name	Time	Mechanism	Manifestations
I	IgE mediated	20–30 min	Antigen binding to IgE induces release of vasoactive mediators	Systemic and local anaphylaxis
II	Antibody-mediated cytotoxic	5–8 h	Antibody to cell surface antigens activates complement and antibody-dependent cytotoxicity	Blood transfusion reactions, autoimmune hemolytic anemia
III	Immune-complex mediated	2–8 h	Immune-complex deposition induces complement activation	Systemic lupus erythematosus, rheumatoid arthritis, glomerulonephritis
IV (delayed reaction)	Cell mediated	24–72 h	Sensitized Tdth cells release cytokines	Contact dermatitis; graft rejection

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Anaphylaxis represents a rapid mast cell or basophil degranulation with releases large amounts of active mediators into the circulation.

Traditionally only IgE related reactions were term anaphylaxis, with other causes named anaphylactoid.

This has fallen out of favour, with anaphylaxis representing all reactions were there is rapid mast cell and/or basophil release.

Type IV reactions further classified cell type associated with the T-Cells

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| IVa | Macrophages     | Tuberculin skin reactions                  |
| IVb | Eosinophils     | Chronic asthma / chronic allergic rhinitis |
| IVc | T-Cell (direct) | Contact dermatitis                         |
| IVd | Neutrophils     | Behcet disease                             |