The process of mounting an immune response against a normal body component

Autoimmunity

Factors inducing autoimmunity

- 1-exposure of hidden antigens
- A- Antigens hidden in cells or tissues
- For example: In the testes, cells become functional after puberty-long after the t cell system development and these cells become hidden. If the testes are injured by infection or trauma, the antigens are exposed.
  - Hidden antigens after heart attack

Factors-----

- **B- Antigens generated by molecular changes**
- Development of completely new epitopes on normal proteins.
- For example:
- 1- Rheumatoid factors (RFs) are autoantibodies directed against other immunoglobulins (rheumatoid arthritis).
- 2-Immunoconglutinins (IK) are autoantibodies directed against the complement components (C2, C4 and C3)

Factors----

- **2- Molecular Mimicry (autoantibodies produced due to infection)**
- Sharing of epitopes between the causative agents and the self cells.
- Trypanosome cruzi contains antigens that cross-react with mammalian neurons and cardiac muscle.
- M protein of group A Streptococci cross-react with cardiac myosin.

Factors-----

- **3- Alteration of antigen processing**
- T cell may develop tolerance to an antigen simply because is not efficiently processes.
- Example :
- Throtoxicosis
- Diabetes
- **4-Failure of Regulatory control**
- Injection of mice with rat RBCs developing antibodies against rat and mice RBCs

- Myasthenia gravis, an autoimmune disease involving neuromuscular junction is commonly associated with the process of a thymoma.

Factors------

- **5- Viruses**
- Mice infected with certain reoviruses develop an autoimmune disease characterized by d.mellitus.
- **6- Genetic basis**
- Not all individuals develop autoimmune diseases and this may be related toMHC and genetic build up and defective thymic selection.

Mechanisms of tissue damage in autoimmunity

- ***1- type I hypersensitivity***
- Milk allergy in cattle is an autoimmune disease to milk alpha-casein protein.
- ***2- type II hypersensitivity***
- Autoimmune hemolytic anemia
- Thrombocytopenia
- ***3-Type III hyper-***---
- Systemic lupus erythamatosis (SLE): autoantibodies against DN A and RNA and the resulting complex deposited in widespread throughout the vascular system.
- ***4- Type IV hyper-***---
- Insulin dependent diabetes mellitus

Organ-specific autoimmune diseases

- **1-autoimmune endocrine diseases**
- **A**-lymphocytic thyroiditis
- Dogs , humans and chickens
- **B**- hyperthyroidism
- Disease of older cats
- **C-** lymphocytic parathyroiditis
- Dogs and cats, hypocalcaemia and reduced serum parathyroid hormones.
- **D-** Insulin-dependent D. mellitus

2-autoimmune neurological diseases

- **A**-equine polyneuritis
- **B**- canine polyneuritis (raccoon bound paralysis)