



Premunity..... and Harmful Immune Response

Dr. AJIT KUMAR

Department of Veterinary Parasitology

Bihar Veterinary College

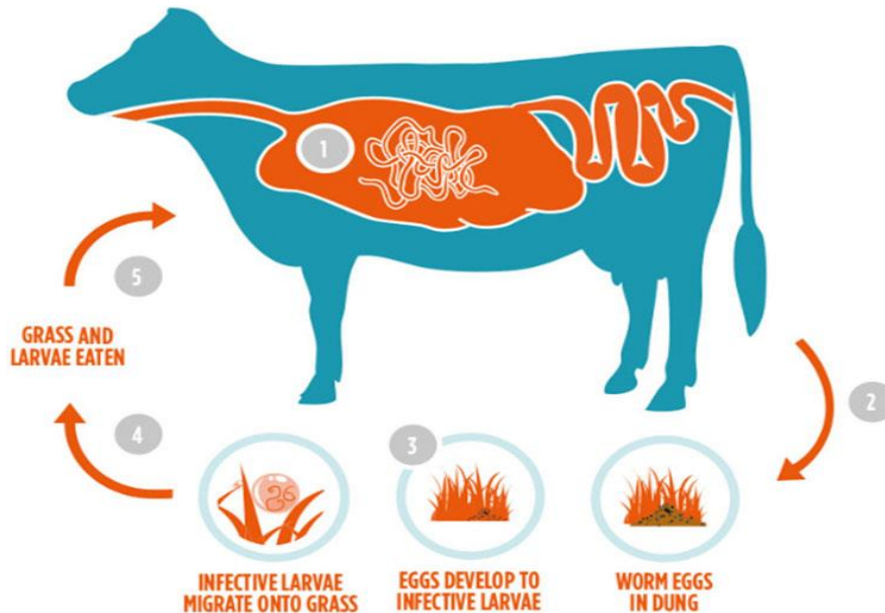
Bihar Animal Sciences University

Patna-800014

Immune Response

Active Immunity :

- ✓ Premunity
- ✓ Sterilizing Immunity
- ✓ Autoimmunity



Immune Response

➤ **Premunity :-**

It is an incomplete immunity or concomitant immunity in which presence of a low level persistent infection which prevents further infection.

Immune Response

Sterilising immunity:

- **This is life long solid immunity occurs after cutaneous leishmaniosis in man, *T. parva* infection in cattle, Babesia infection and Coccidiosis.**
- **The immunity remains in absence of the parasites.**

Immune Response

Autoimmunity:

- **The immunity which occurs against self-antigen.**
- **Autoimmunity commonly occurs in haemoprotozoan (*Trypanosoma, Leishmania, Babesia* and *Plasmodium* species) infections which leads anaemia due to destruction of erythrocytes in which even the uninvaded cells are also destroyed.**

Harmful Immune Response

- ❖ **Usually immune response plays the protective role by killing or expulsion or limiting the untoward effects**
- ❖ **But Sometimes, immune response produces harmful effects in the hosts as a result of hypersensitivity reactions.**

Harmful Immune Response

Hypersensitivity Reactions:

Four types:

- ❖ **Type- I or Immediate hypersensitivity or Anaphylactic Reaction**
- ❖ **Type-II or Antibody dependent Cytotoxic Hypersensitivity (ADCC)**
- ❖ **Type-III or Immune complex hypersensitivity**
- ❖ **Type – IV or Delayed Hypersensitivity (DTH)**

First three types are antibody mediated while the Type-IV is T-cells and macrophages mediated.

Harmful Immune Response

❖ **Type- I or Immediate hypersensitivity or Anaphylactic Reaction :-**

❖ **Parasitic antigens (allergens) combine with IgE sensitized mast cells which released vasoactive substances like lymphokines and cytokines and causing damage in the host or induce inflammation.**

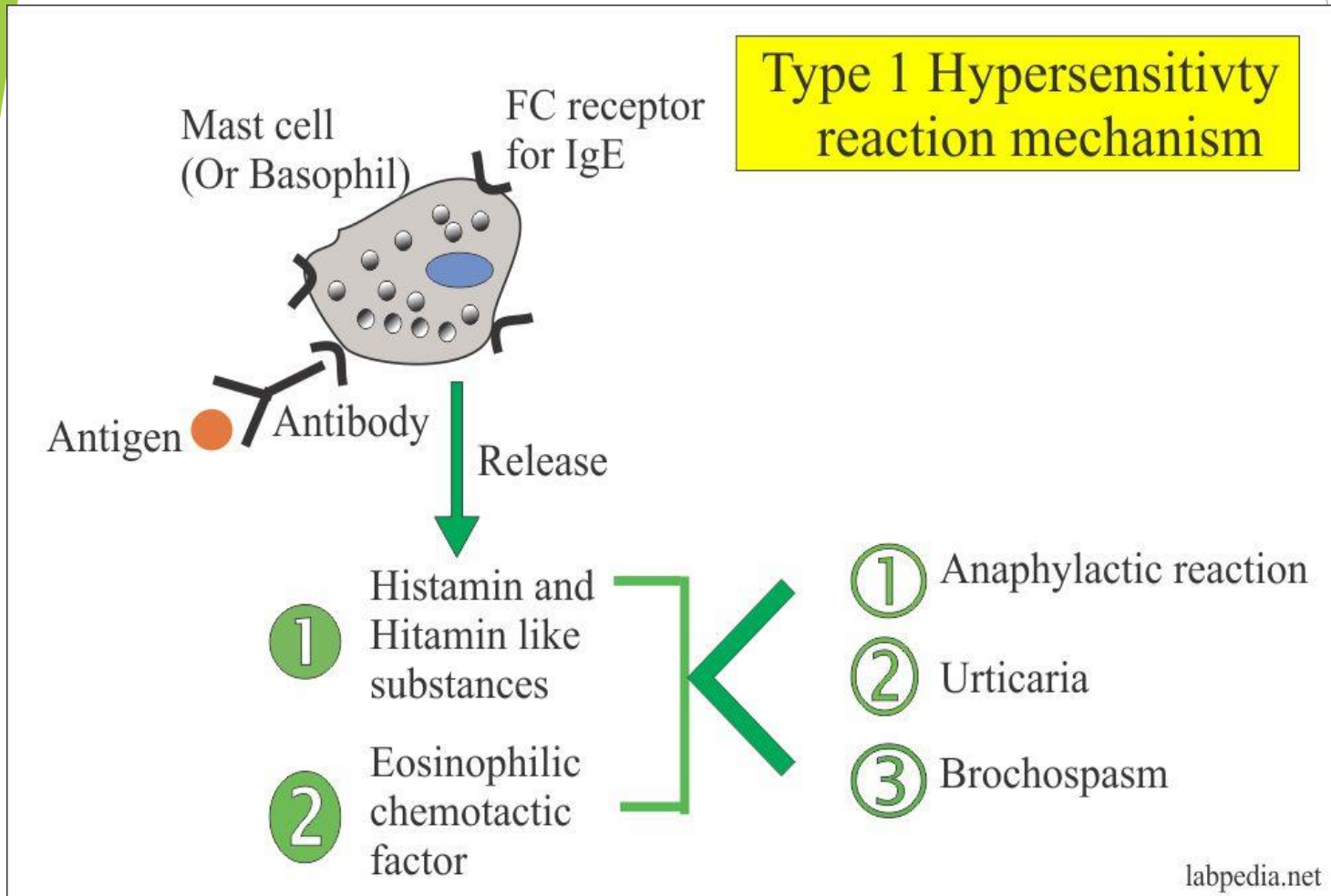
e.g. Anaphylactic reactions occurs due to rupture of Hydatid cyst.



HYDATID CYST

Harmful Immune Response

❖ Type- I or Immediate hypersensitivity or Anaphylactic Reaction :-



Harmful Immune Response

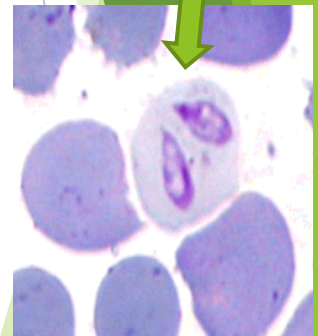
❖ **Type- II or Antibody dependent Cytotoxic Hypersensitivity (ADCC) :-**

❖ **Parasitised cells combine with Antibodies in presence of complement which result destruction of cells.**

e.g. Haemolysis of erythrocytes (RBCs) in Babesiosis and malaria.

Development of chronic myocarditis or megacolon in Chagas disease (*Trypanosoma cruzi*)

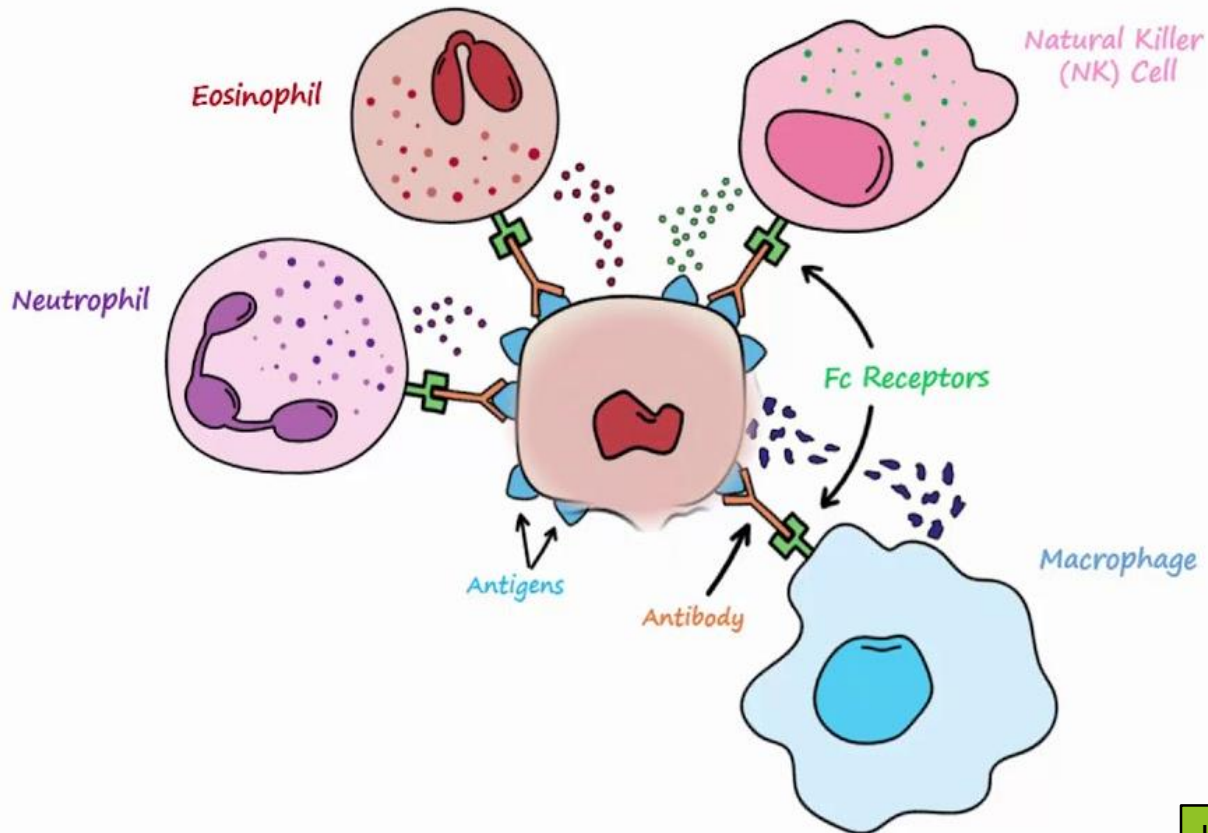
Babesia sp.
Inside RBC



Harmful Immune Response

❖ **Type- II or Antibody dependent Cytotoxic Hypersensitivity (ADCC) :-**

Antibody-Dependent Cell-Mediated Cytotoxicity (ADCC)



Harmful Immune Response

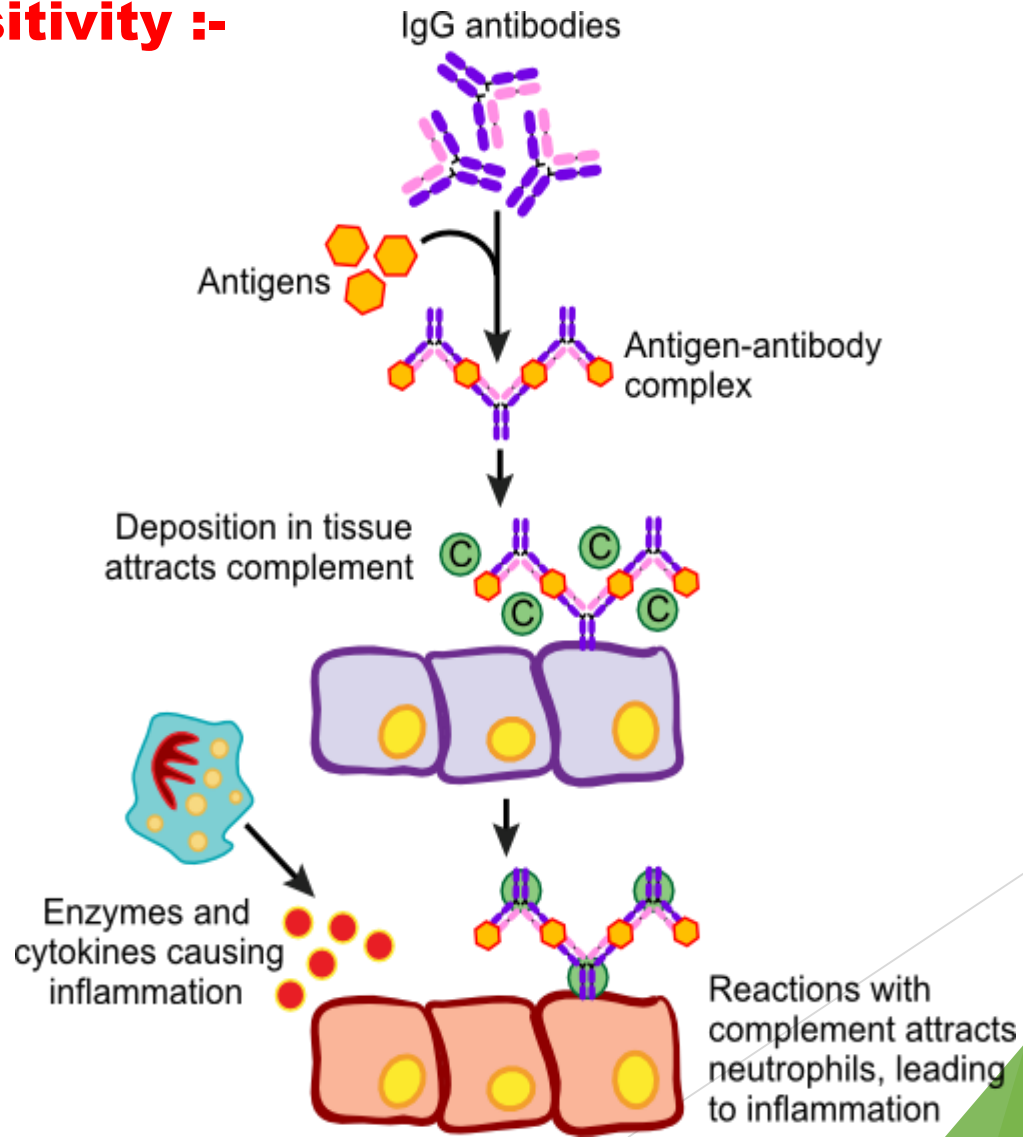
❖ **Type-III or Immune Complex hypersensitivity :-**

Antigen, Antibody and complement form immune complex which result neutrophil accumulation and tissue damage and finally inflammatory response.

e.g. Glomerulonephritis in malaria.

Harmful Immune Response

❖ Type-III or Immune Complex hypersensitivity :-



Harmful Immune Response

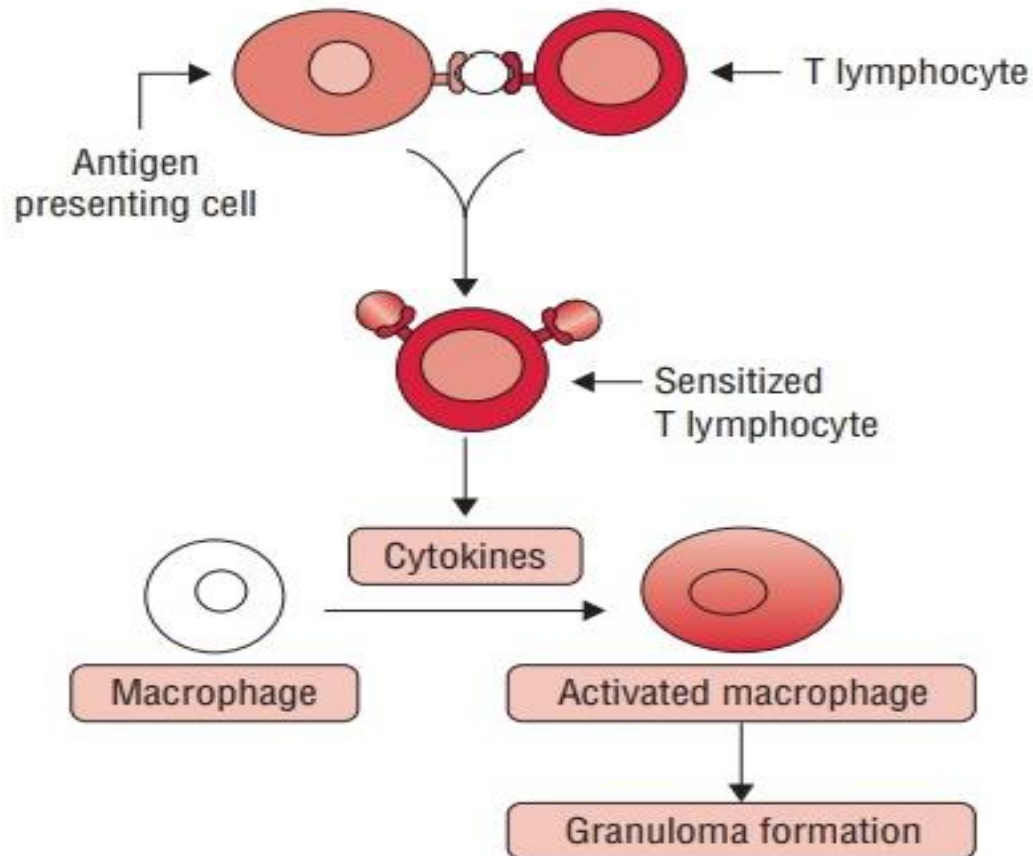
❖ **Type – IV or Delayed Hypersensitivity (DTH) :-**

Parasitic antigen combines with sensitized T cell and release lymphokines which is responsible for the accumulation of mononuclear cells followed by tissue damage.

e.g. Inflammation around *Trichinella* larvae in the muscle, pathological lesions in Schistosomosis etc.

Harmful Immune Response

❖ Type – IV or Delayed Hypersensitivity (DTH) :-



A schematic diagram showing type IV hypersensitivity

THANK U