

Innate

① Neutrophils:

- granulated
- 3-lobed nucleus
- increases in blood clot in case of bacterial infection

② Eosinophils:

- bigger in size
- 2-lobed nucleus
- granulated
- against parasites
- involved in allergic reactions

③ Macrophages:

- monocyte (in blood)
- ↓
- macrophage (in tissue)
- lives in tissues for months

- first cell to fight microorganisms
- phagocytosis → AP to show and activate other immune cells

④ Mast cells:

- basophil (in blood)
- ↓
- mast cell (in tissue)
- involved in allergic reactions

⑤ Natural killers:

- innate
- produced by lymphoid progenitors
- non-specific !!

Adaptive:

① T lymphocytes:

a) CD4+

• helper

b) CD8+

• cytotoxic

• lysis of virus

infected cells

• specific unlike

natural killer

② B lymphocytes:

• if activated they are called
plasma cells and releases

antibodies

Antigen Presenters: ^{to} T and B

① Dendritic cells:

• takes antigen and

shows T, B lymphocytes

migrates from infection

site to T, B lymphocytes

to "show" them the

antigen

• innate

② Macrophages

• innate

③ B lymphocytes

• shows T lymphocytes

• adaptive

• specific, each

cell is specific

to a certain

microorganism.

one copy is not

enough to kill

a microbe so it:

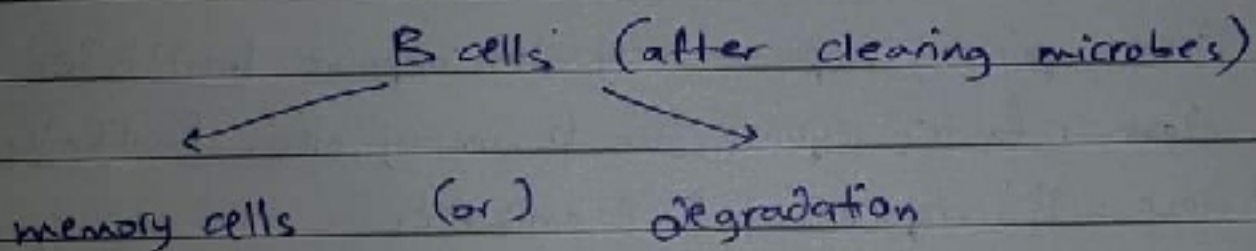
① identifies micro using specific receptor - antigen

② that cell undergoes "clonal selection therapy"

Autoimmune Diseases:

A foreign antigen is replaced by a self protein and identified as a "non-self". It meets its specific B cell, activates it by antigen-receptor binding causing B cell to undergo cloning and attack all cells with the self proteins.

After the cells undergo cloning and attack the invading microbes one of 2 things happen.



Active → forms memory cells due to an attack actually happening

Passive → X memory cells

Placenta → fetus = native passive

Rabies: affects nervous system, death due to Xbreathing.

immediately administer vaccine (antibodies against rabies virus). Naturally, it takes 7 days which is too long = death. So we cannot wait.

Phases of immune response:

- ① Cognitive phase: antigen --- receptor
- ② Activation phase: clonal selection theory, proliferation
- ③ Effector phase: becomes a secretory cell (antibody production)

• hepatitis B vaccine is not given to all. Mostly to people who are dealing with blood (medics etc.)

• given in 3 doses.

1st dose: primary response, very slow response. ↓ antibodies

2nd dose: faster response due to memory cells. ↑ antibodies

3rd dose: ↑↑↑ response, ↑↑↑ antibodies

Strength of dose does not affect speed of response. Memory cell's presence does.