

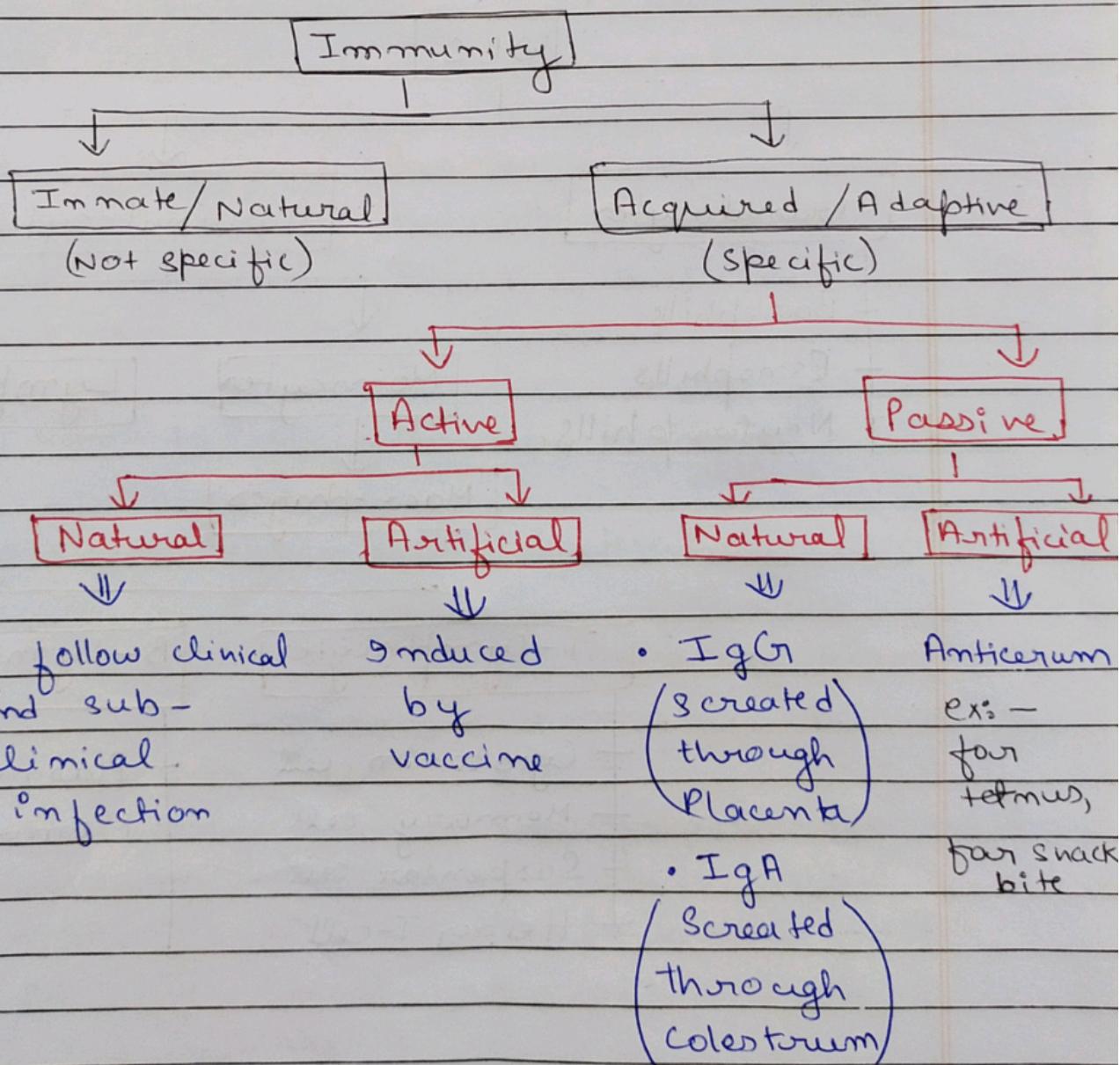
Human Health and Disease

Immune System -

System of body which protect the body from disease.

Immunity

Resistant of the body against a pathogen or disease.

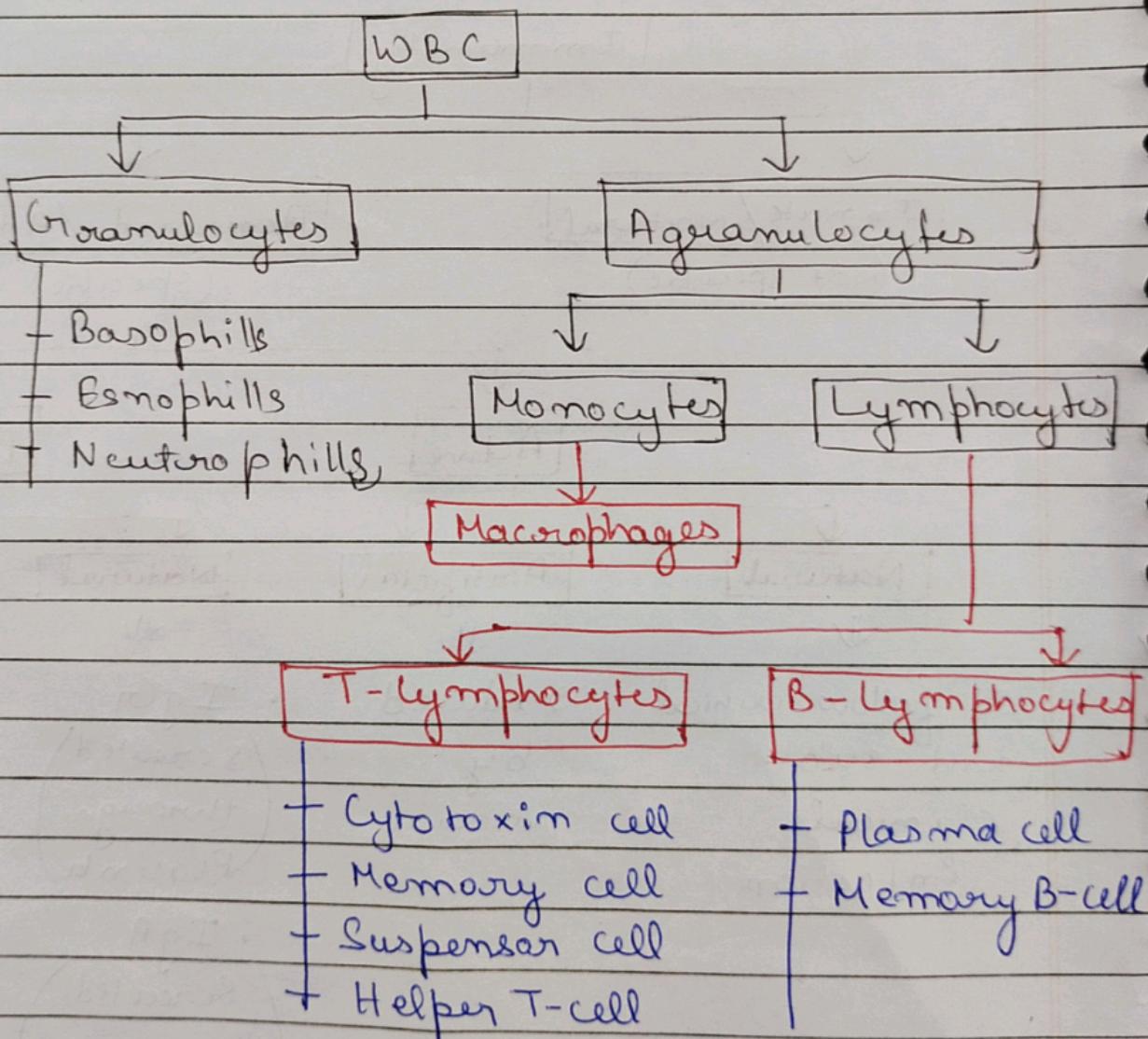


Immune immunity

The immunity which present by birth.

It has four types:-

- i) Physical Barrier
- ii) Physiological Barrier
- iii) Cellular Barrier
- iv) Cytokine Barrier



i) Physical Barrier

- Skin on our body is the main barrier which prevents the entry of microorganism
- Outer most layer of our skin is called Stratum corneum
It is the dead cell, so no bacteria can grow on their surface.
- Ph of skin is 5.9, i.e., can destroy the bacteria.

ii) Physiological Barrier

- Acidic Ph of Body - part like stomach and vagina, saliva in mouth, tears from eyes.
- From tears Lysozyme secreted.
- Lysozyme kills the bacteria
- Tears secreted from lacrimal gland.

iii) Cellular Barrier.

Our body WBC have polymorpho nuclear leucocyte, PMNL, neutrophils and monocyte and natural killers cell in the blood as well as macrophages.

w) Cytokine Barrier

Virus infected cell secrete protein
- called Interferons.

Interferons made up from 270 A.A
(Amino acid).

Interferon also called single protein

Interferon are usually present in
~~in the~~ infected cells.

Interferon signals to non-infected
cell from prevention of infection

Ex:- Interferon, cytokine,

Acquired Immunity

- The immunity which get after birth
- It is pathogenic specific
- Acquired during life time.

Antigen

It is a promissive substance which stimulates production of antibody.

Antigen is also called A

It is a special type of Glycoprotein which is secreted from B-lymphocytes in the response any antigen.

Aglutination

Reaction between antigen and antibody.

Anticserum

Cerum of an animal which contains the antibody for a specific antigen.

Antigen is like name or identity card of human cell.

We have two types of immunity based on antibody.

i) Humoral Immune Response

↳ controlled by B-lymphocytes.

ii) Cell mediated Immunity

↳ controlled by T-lymphocytes

Types of Antibodies

i) IgG

- It is most abundant antibody (75-80%)
- It has capacity to pass through placenta
- It is universal antibody.
- Its molecular weight is lower than other antibodies.
- It is 1st appeared antibody which provide immunity to embryo and stimulate phagocytic cell for phagocytosis.
- It protect body surface.

ii) IgA

- It is 10% of total antibody
- It is the provide secretion of Saliva, mucus and other secretaries
- It is also called secretary antibody
- It occurs 5-10% of total antibody.

- It is the 1st antibody generate in response of antigen.
- It is strongest antibody.
- It activates β -lymphocytes.
- It protect body blood stream.

iii) IgD

- It present in trace amount (1-3%).
- It present on the surface of
- It activates B-lymphocytes.

iv) IgE

- It present in 0.5 - 1%.
- It stimulate most of the cell for allergy reaction
- It is also called allergic antibody.

Allergy (Hyper sensitive disorder)

- If a person shows hyper sensitivity for common agent or antigen, then it is called Allergy.
- Those who causes allergy are called allergen.

Root cause of Allergy

- Pollen grain
- Food [Fish and egg]
- Medicine
- Cold
- heat
- Sunlight
- dust

- Most of the allergy is due to pollen grain.

Drug

"Anti histamin", "Adrenalin" and "steroids" reduce the symptoms of energy.

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Allergy is due to release of chemical like histamine and serotonin.

AIDS (Acquired Immunio Deficiency Syndrome)

↓
different
types of symptoms.

- AIDS is not a congenital disease, (congenital infection).
- AIDS spreaded due to HIV virus
- HIV virus is a **Retro virus** (community virus)
- HIV virus having RNA as a genetic material.

* Transmission of AIDS :-

- Through sexual contact with infected person
- Transfusion of contaminated blood and blood products.
- By sharing infected needles as in case of intravenous drug abusers
- ~~From Infected needles as~~

- From infected mother to her child through placenta.
- People who are at high risk of getting this infection includes -
 - a) individuals who have multiple sexual partners , b) drug addicts who take drugs intravenously ,
 - c) individuals who require repeated blood transfusion and d) children born to an HIV infected mother .

* Misconception of HIV :-

- AIDS never spread through sharing of food .
- Never spread through hugging .
- Never spread through kissing .
- Never spread through shaking hand with other person .
- Never spread through physical contact .

* HIV spread through body fluid.

Note!— AIDS never spread through saliva with little amount

AIDS through saliva spread if saliva would be in max^{mm} amount (1 litre or more than 1 litre).

— In AIDS, HIV virus kills the "helper T-cell"

— Most of the AIDS cases are due to transfusion of blood, through embryonic connection.

— AIDS infected person can prolong their life by 5 yrs to 10 yrs using drugs like:-

i) Ziduvudine / Azidothymidine (AZT)

- These are faulty nucleoside
- These are also called reverse transcripted inhibitor.

ii) Ritona (Protease inhibitor)

- It is highly active anti Retro viral therapy
- It include both reverse transcriptase and protease inhibitor.

World's AIDS day → 1st December.

Cancer

- Uncontrolled, Abnormal and excessive mitotic division of cell is called Cancer.
- Study of cancer is called Oncology
- Normal cell has limitation to ~~that~~ ~~grow~~ but certain time it stop dividing as at each cell division telomere of cell become short since it has mortal cell line

From 1 cell produce all sister cell till ~~their~~ the limit of division

— In cancer cell, due to presence of telomerase enzyme it protect telomere of cell, so cell continue to divide, and this type of cell is called cancer cell.

— Normal cell has contact inhibition while cancerous cell does not shows contact inhibition.

— In cancer, tumor grows.

— Tumor is of two types:-

i) Benign Tumor

ii) Malignant Tumor

i) Benign Tumor

It does not split to other part of cell and cause little damage.

Ex:- Mole

ii) Malignant Tumor

A mass of proliferating cells is called neoplastic or tumor cell or malignant tumor.

3 types -

Carcinoma

Sarcoma

Leukemia / Blood cancer

Carcinoma

- It is 85% time occur
- Cancer which is originated from skin and epithelium tissue.

Ex:- Oral, skin, gas.

- Breast cancer is occur due to high concern of estrogen.
- In male prostate cancer occur

Sarcoma

- It is tumor of mesodermal tissue on bone.
- Bone cancer is ^{also} called osteosarcoma
- Muscle cancer is called microsarcoma
- Lymph cancer is called lymphosarcoma

Leukemia / Blood cancer

- It is cancer of WBC
- Ultimate treatment of leukemia is bone marrow transplant

Due to

- During Oncogene does not converted
Oncology
- Cancerous cell shows metastasis
- If cancerous cell spread all over body through blood stream called Metastasis.

Causes of Cancer

- **Carcinogens** cause cancer
 - ↓
Agent which cause cancer
- Carcinogens can be physical, chemical or biological.

Physical — α -ray, γ -ray, β -ray,
 \downarrow
 X -ray, delta-ray.

Non ionising radiation like UV ray can also cause cancer.

Chemical :-

along with tobacco if we smoke - then that are chemical carcinogens.

Biological :-

Oncogenic virus is Biological agents or carcinogens

Human papilloma virus can cause "cervical cancer" and steady disease

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Detection or Diagnosis cancer

- (i) Histopathological study
- (ii) Radiography like (x-ray)
- (iii) Computed tomography (ctyscan)

Treatment of cancer

(i) chemotherapy

It is change of blood

- In this process / therapy, we use some drugs which kill fast growing cell
- It is threatens to fast growing cell like hair follicle bone marrow cell (stem cell)

In this cell stem cell depression occurs.

We use some medicine like vinblastin and vincristin. These are antitumor cancer and it is occurs from catharanthus.

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- (iii) Surgery
 - (iv) Radiation therapy
 - (v) Immune therapy

Drugs

- Drugs are mood altering substance
- Drugs is classified into 5 types

Types of Drugs

- (i) Tranquillizers - calmness to the nervous system
- (ii) Sedatives and hypnotics - sleep inducing
- (iii) Hallucinogens - cause Hallucinogenation
(High imagination)
- (iv) Stimulants
 - gt mainly affects on cardiovascular system
- (v) Opioids
 - gt stimulates the nervous system
- (vi) Stimulants - gt stimulates the nervous system
- (vii) Opioids - gt is depressant and analgesic (Pain killer)

Opioid (poppy)

It is represented into two form
natural and semisynthetic

Natural

Morphin

it is isolated

from latex of poppy
Plant

Semi-Synthetic

- (Heroin) (smack)

- It is obtained
by

• It is used for surgery. • It is acetylation
of morphin

• It decrease the blood pressure
and respiration • It is 3 times
more strong than (potent)
morphin

Codime

It is methylated
morphin

• It is white in
colour

• It is odourless

• It is mild analgesic
and in ingredients
of cough syrup

• It is better

• It is crystalline
compound

• It is taken as
snorting (through)
nose

(iii) Hallucinogens

Canabissativa or Cannabinoids



- It is a type hallucinogens
- It is 4 different derivatines
 - (a) charas and hashish
- It is obtained from dry resinous
- It is extracted from flower and leaf of plant (Top)
- It is most potent (strong, effecting)
- It is smoke with Tobacco

(b) Marijuana

- . It is extracted from dried flower and top leaf female plants
- . Its active ingredients are
It taken as smoke.

(c) Bhang

- It is extracted from fresh or dry leaf and flowering shoot of both male and female plant

gt acts slowly

- gt is taken as oily only in the form drink or

(d) banja

gt is extracted from unfertilised plant from their dry leaf

gt is used through smoke

(e) cocaine

gt is also called coca alkaloid or coke or crack

cocaine is extracted from *Erythroxylum coca* (native to South America)

- gt is a neuro-transmitter
- gt is highly affective of central nervous system

High dose of cocaine cause hallucinogens

a) Atropa belladonna and Datura

- Also have hallucinogenic property
- From Atropa belladonna Atropine is extracted
- Atropine is used to increase eye pupil (by tribes)

Barbiturates and Benzodiazepines are used as tranquilizers and sedatives

Through this we get a chemical like Diazepam

It is a sleep inducing chemical

Amitamines is antisleeping stimulants

These medicine use for mental illness

LSD (Lysergic Acid di-ethyl-amide)

It is the most potent drug until now

LSD is white in color

It has no color

It is crystalline in nature

Formation → On Rye plant if a Fungus called purpura grows and from their fruiting bodies we get LSD.