

CELLULAR ADAPTATIONS AND CELL INJURY

Cell Injury: Definition - It is defined as the functional and morphologic effects of a variety of stresses on the cell from various etiologic agents which results in changes in the external and internal environment.

→ Cellular response to stress depends on two factors.

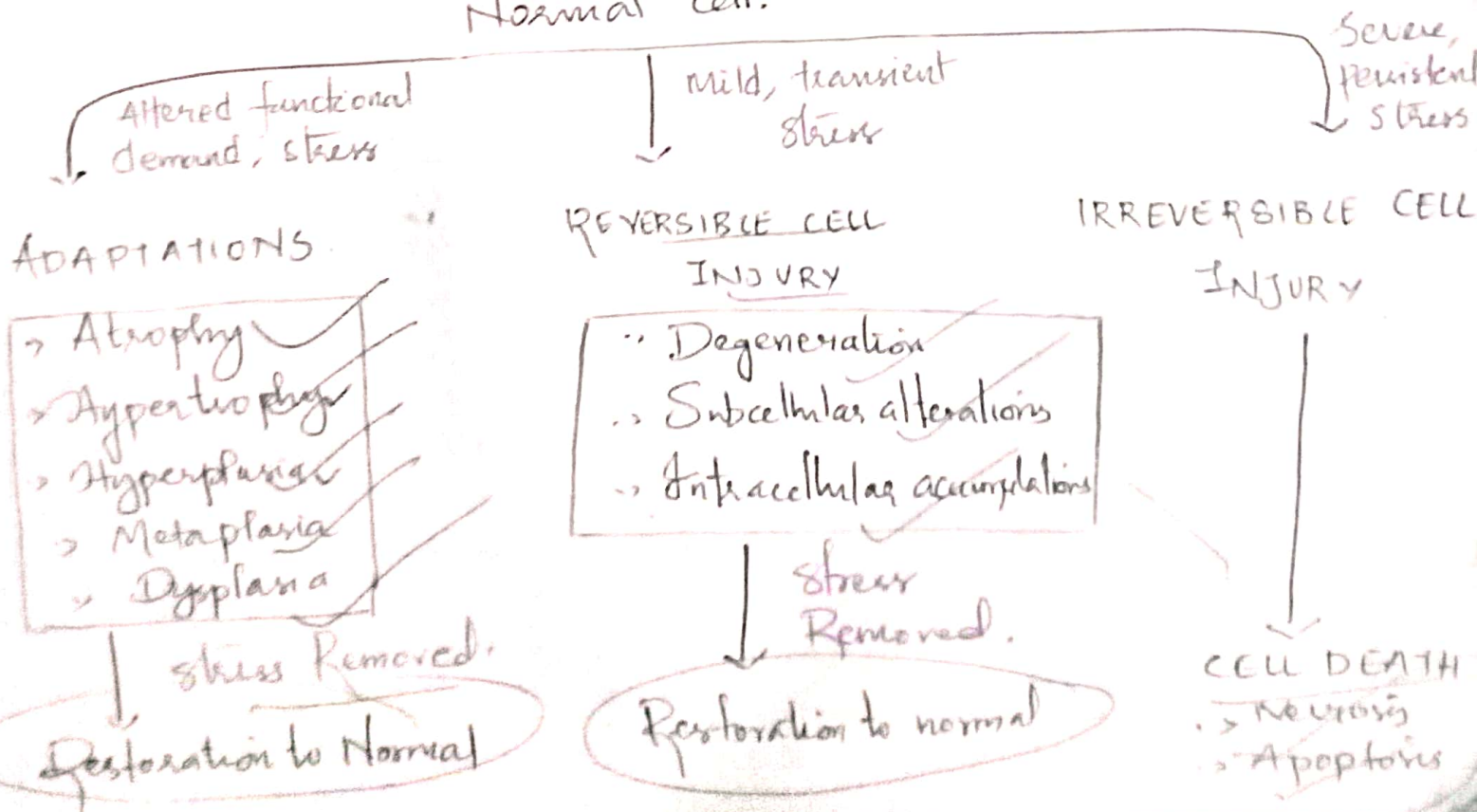
(i) Host factors

- Type of cell
- nutritional status of cell etc.

(ii) Factors pertaining to injurious agents.

- Its type
- Dose etc.

Various Forms of Cellular Response to Injurious agents.
Normal Cell.



→ Cells are active participants in their environment.

3 types of cells-

→ Labile-epithelium, Basement membrane

→ Stable / Quiescent - capable of division in response to stimuli.

→ Permanent / Non-dividing - neurons, myocardium.

→ Various etiological agents:

1. Hypoxia and Ischaemia

2. Physical agents

3. Chemical agents and drugs

4. Microbial agents

5. Immunologic causes

6. Nutritional derangements.

7. Ageing.

8. Psychogenic causes.

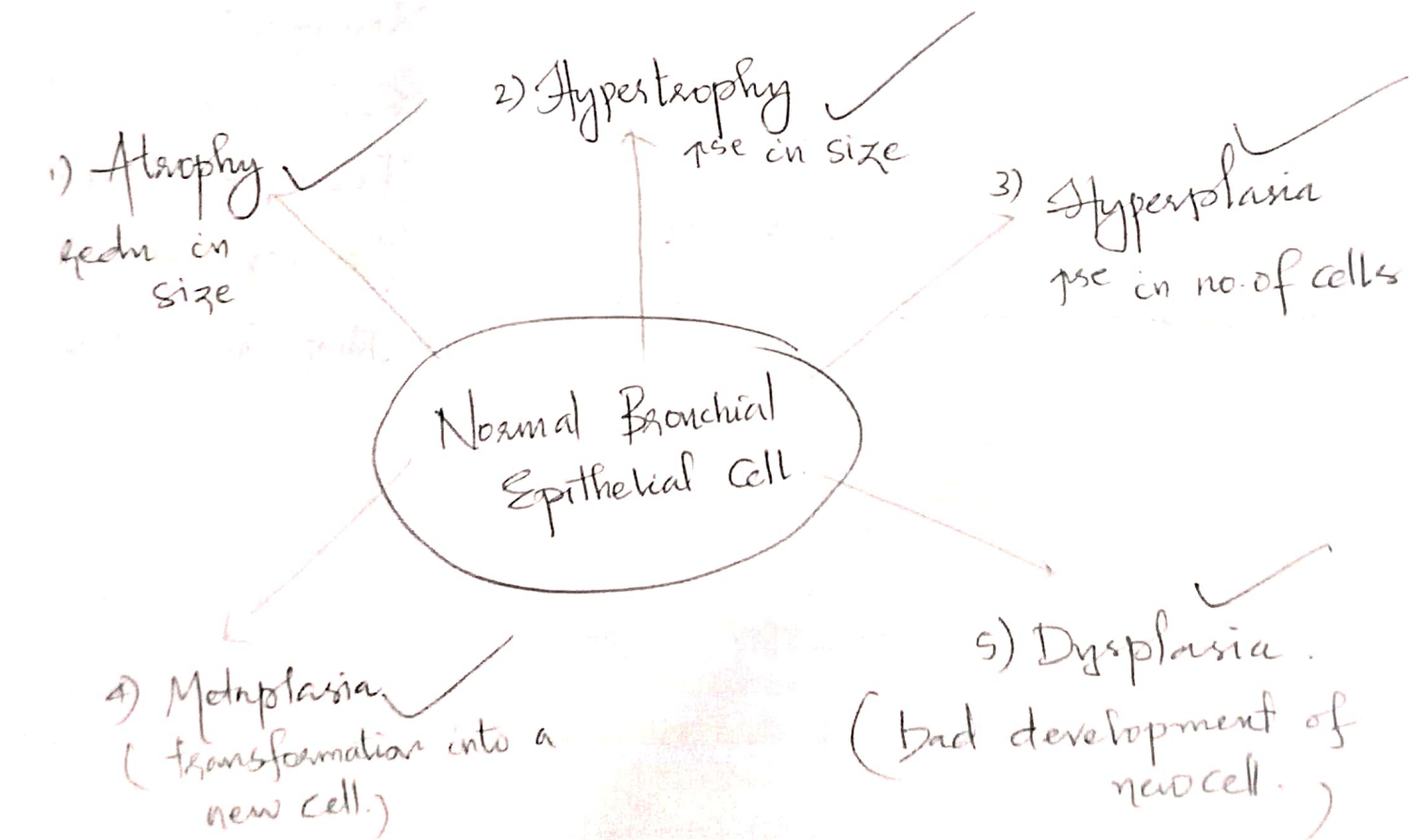
9. Iatrogenic causes

10. Idiopathic diseases.

Cellular Adaptations

Defn: They are the adjustments which the cells make in response to stresses which may be for physiologic needs (physiological adaptations) or a response to non-lethal pathologic injury (pathologic adaptation).

Adaptive disorders of growth.



1) ATROPHY

→ Redn of the number and size of parenchymal cells of an organ or its parts which was once normal is called atrophy.

Atrophy - Causes

- 2 types

Physiological Atrophy ✓

Atrophy of lymphoid tissue with age.
Atrophy of thymus in adult life.

" " gonads after menopause.

" " brain with ageing.

Osteoporosis with reduction in size of bony trabeculae due to ageing.

Pathological Atrophy ✓

1. Starvation atrophy.

2. Ischaemic atrophy.

3. Disuse atrophy.

4. Neuropathic atrophy.

5. Endocrine atrophy.

6. Pressure atrophy.

7. Developmental disorders.

8. Idiopathic atrophy.