Adaptation	Definition	Causes		Examples		Other notes
		Physiologic	Pathologic	Physiologic	Pathologic	
Hypertrophy	Increased cell size & functional capacity	1. Hormonal stimulation 2. Growth factor stimulation 3. Increased functional demand		1. Uterine smooth muscle during pregnancy 2. Skeletal muscles in athletes	Cardiac smooth muscle in hypertension and Aortic stenosis	Done by an increased structural proteins & organelles
Hyperplasia	Increase in number of cells in tissues that have proliferative ability	1. Hormonal stimulation 2. Compensatory	1. Excessive hormonal stimulation 2. Viral infection	1. Breast during puberty and pregnancy 2. Liver after partial resection	1. Endometrial hyperplasia (Estrogen induced) 2. Benign prostatic hyperplasia (Androgen induced)	Pathologic hyperplasia constitutes a fertile soil in which cancer may eventually rise
Atrophy	Decrease in cell size & function	1. Decreased work load 2. Loss of innervation 3. Diminished blood supply 4. Loss of endocrine stimulation 5. Inadequate nutrition 6. Aging		Endometrial Atrophy (loss of hormonal stimulation in menopause)	1. Denervation injuries 2. Chronic ischemia	An example of atrophy caused be aging is "Senile atrophy"
Metaplasia	Change in cell type by reprogramming of stem cells	1. Smoking 2. Vitamin A deficiency 3. GERD (Gastroesophageal reflux disease)		_____		1. New cell type copes better with stress but functions less 2. Vitamin A is needed for normal epithelial differentiation, deficiency leads to squamous metaplasia of the bronchi

Causes of cell injury:

1. Oxygen deprivation (Hypoxia vs Ischemia)
2. Chemical agents
3. Infectious agents
4. Immunologic reactions (autoimmune, allergic and microbes)
5. Genetic factors
6. Nutritional imbalances
7. Physical agents

DOPAMINE SCIENTIFIC TEAM

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