General Pathology 2　January 18, Tuesday, 2005　Masashi Fukayama

Damage and tissue reactions, metabolic diseases

degeneration, atrophy, necrosis – once classified as the regressive change;
hypertrophy, proliferation, regeneration, repair – once classified as the progressive change

1. Tissue reactions

1) degeneration
   a generic term for morphologically distinctive changes which differ from atrophy and necrosis
   hyaline degeneration / hyaline droplet degeneration / fibrinoid degeneration (necrosis)
2) necrosis
   coagulative necrosis / caseous necrosis / colliquative necrosis
   gangrene: dry gangrene / wet gangrene / gas gangrene
3) atrophy
   pseudohypertrophy / brown atrophy (lipofuscin)
4) hypertrophy
   physiologic hypertrophy / exertional hypertrophy / compensatory hypertrophy
   pathologic hypertrophy / hypertensive cardiac hypertrophy / hormonal hypertrophy / hypertrophy by chronic stimulation
5) proliferation, differentiation
   cell cycle G1→S (DNA replication) →G2→M (cell division)
   metaplasia
   dysplasia
6) regeneration
   incomplete (morbid) regeneration
7) granulation tissue and organization
   wounds
   granulation tissue
   organization

2. Metabolic diseases with distinctive morphological changes in tissues

1) fatty liver
   disorders in the process of recruit, storage and secretion of fat to the liver –

imbalance

fatty liver due to hyperalimentation / nonalcoholic steatohepatitis

2) gout
3) amyloidosis (β sheet proteinosis)
4) hemosiderosis and hemochromatosis
5) icterus
6) morbid calcification

dystrophic calcification / metastatic calcification

Cell damage (injury), pathology of cell organelle

morphology of lesions, diseases caused by cell organelle lesions

1. Cell damage and reactions

cytotoxic factors and mechanism

ischemia / drug

free radical /membrane damage

morphological changes of cell damage

acute cell damage (injury) / enlargement / steatosis(degeneration, tiger spotted heart) / necrosis, apoptosis /

chronic cell damage (injury) / smooth-surfaced endoplasmic reticulum hyperplasia (hyperfunction type / hypofunction type) / mitochondrion / Mallory bodies (alcoholic hyaline) / neurofibrillary tangle

2. Abnormalities and diseases of cell organelle

To understand abnormal structures and diseases bi-directionally: diseases in view of abnormal structures and structural abnormality in view of diseases.

1) lysosome disease
   lysosome and proteasome
   Pompe disease
   Gaucher disease
   Fabry disease
   I-cell disease
2) peroxisome disease
   Zellweger disease
   adrenoleukodystrophy
   clofibrate for hyperlipidemia
3) mitochondrion (mitos – thread, chondros – granule)
   mitochondrion DNA
   hereditary diseases caused by the abnormality of mitochondrion DNA
   Kearns-Sayere syndromes / MELAS (mitochondrial myopathy, encephalopathy, lactic acidosis stroke-like episodes)
   diabetic mellitus / aging, Parkinson disease, Alzheimer disease

3. Cells adhesion, others

1) appratus for intercellular adhesion
   desmosome / pemphigus vulgaris / pemphigus foliaceus
   hemidesmosome / pemphigoid antigen
2) immotile cilia syndrome
3) muscular dystrophy and lining structure of cell membrane
4) cystic fibrosis, CF and channel dysfunction