Course :Human Pathology

INTRODUCTION TO HUMAN DISEASE

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What is Disease

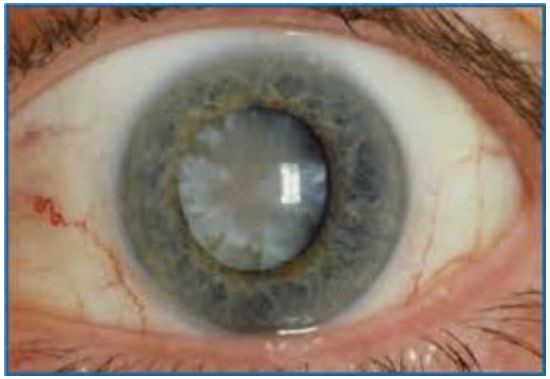
- Disease – structural or functional change in the body that is harmful to the organism

- Occurs when cellular environment changes to such a degree that tissues are no longer able to perform their function optimally

- Child with measles

CATARACTS

- Crystalline lens of the eye undergoes degenerative changes, becomes cloudy, obstructs the passage of light and causes decreased visual acuity
- Occurs over time



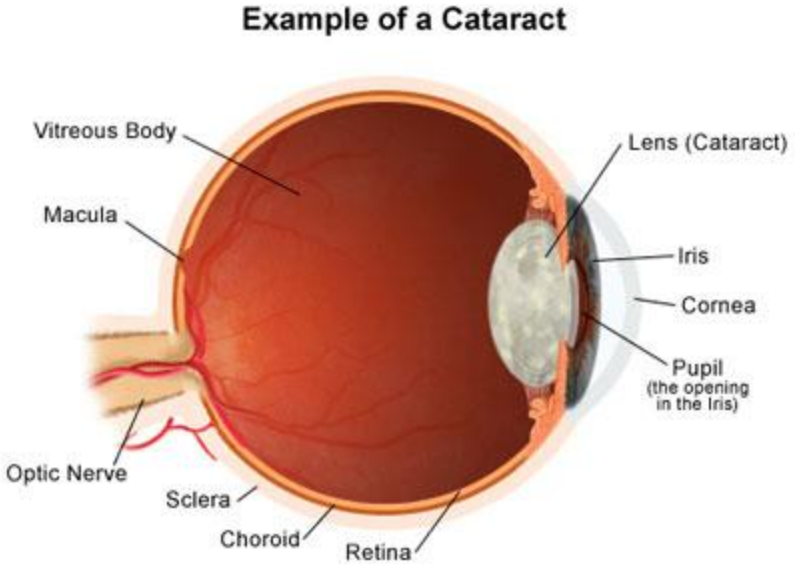
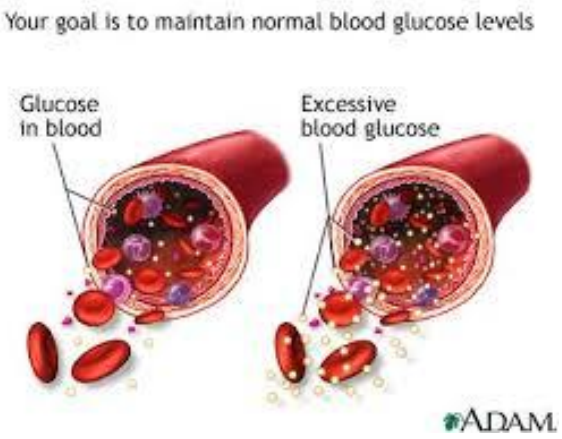
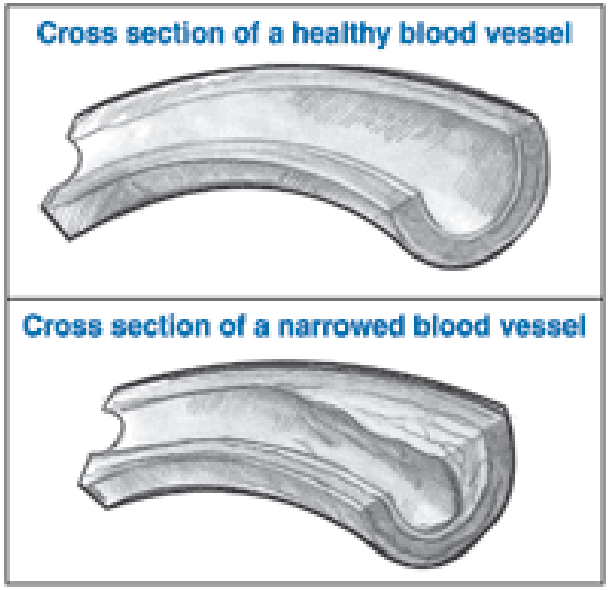


Fig. 2 A cataract interferes with vision because it obstructs the lens of the eye through which light passes, causing light to refract differently than in a healthy eye.

DIABETES

- Extracellular tissue of blood vessel walls undergoes changes that lead to narrowing of blood vessels
- This leads to decreased blood flow, decreased oxygen delivery and eventual irreversible damage to tissues such as the retina, skin, heart, and kidney





Cancer

- Mutations accumulate in the nucleic acids of cells which result in the distorted function and structure of proteins
- This affects the way the cells interact with or react to other cells, growth factors, hormones, and the extracellular matrix of the environment
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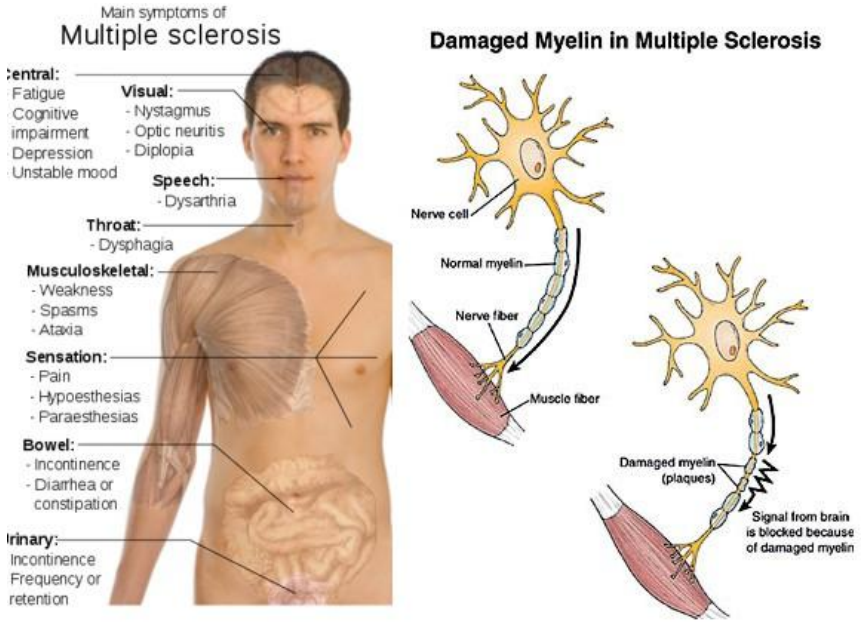
Pancreatic

- Cancer

Multiple Sclerosis

- Destruction of the protective myelin sheath around axons in the brain which results in decreased electrical conduction
- Signs and symptoms include weakness, double vision and incoordination



CELLULAR BASIS FOR DISEASE

- With the Enlightenment, people began to look at workings of the body in a scientific manner

- Scientifically oriented doctors formed idea that disease is not caused by an external force that takes possession of the body, but arises from organs and tissues and leaves visible traces there

CLINICOPATHOLOGIC OBSERVATIONS

- Physicians gained insights by closely observing the course of disease on a patient's body
- Concluded that diseases can be traced to deranged structures or functions of organs, tissues, or cells (has been extended to molecular level of proteins and genes)
- Called allopathic medicine, biomedicine, Western medicine

Manifestations of Disease

Symptoms

- Evidence of disease perceived by patients
  - i.e. pain, lump, diarrhea

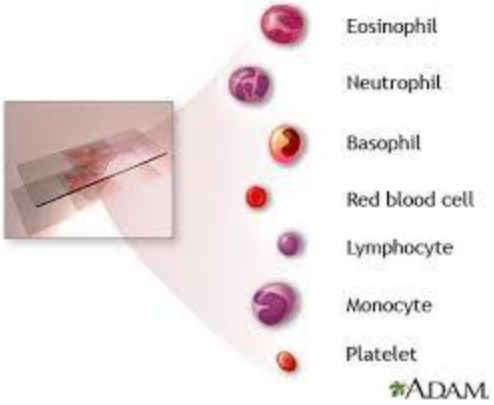
- Health practitioners elicit these during an interview with the patient and record them in the patient's chart as the history

Signs

- Physical observations made by the person who examines the patient
  - i.e tenderness, a mass, abnormal heart sounds
- Elicited and observed during the physical examination
- Results are recorded in the patient's chart.

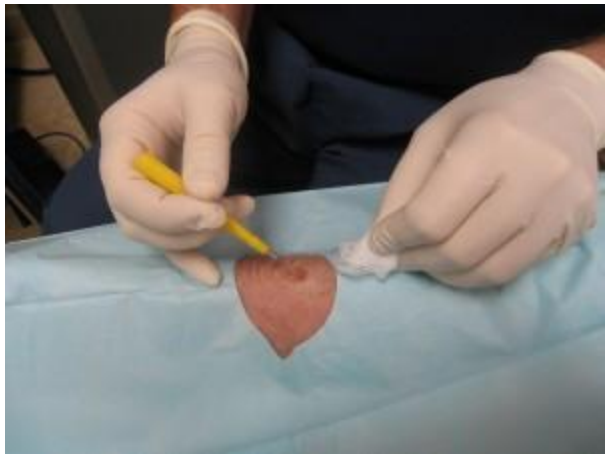
LABORATORY FINDINGS

- Observations made by the application of tests or special procedures
  - X-rays, blood counts, biopsies



Normal Blood Count	
Haemoglobin (Hb)	M 13.5 - 17.5g/dl F 11.5 - 15.5g/dl
Red cells (RBC; erythrocytes)	M 4.5 - 6.5 x 10^{12}/l F 3.9 - 5.6 x 10^{12}/l
PCV (haematocrit)	M 40 - 52% F 36 - 48%
MCV	80 - 95fl
MCH	27 - 34pg
MCHC	30 - 35g/dl
Reticulocytes	0.5 - 20%
White cells (WBC; leucocytes)	
total	4.0 - 11.0 x 10^9/l
neutrophils	2.5 - 7.5 x 10^9/l
lymphocytes	1.5 - 3.5 x 10^9/l
monocytes	0.2 - 0.8 x 10^9/l
eosinophils	0.04 - 0.44 x 10^9/l
basophils	0.01 - 0.1 x 10^9/l
Platelets	150 - 400 x 10^9/l

M=Males F=Females



DIAGNOSIS

- Assimilating the information from patient's history, physical examination, and laboratory findings to identify the condition causing the disease.

- Also refers to the name given to the disease
  - i.e. Diabetes, multiple sclerosis

Causes of Disease

Exogenous – agents causing injury acting from outside the body

- Direct Physical injury is called TRAUMA
  - Physical agents causing disease include:
    - Heat and cold
    - Electricity
    - Atmospheric Pressure changes
    - Radiation (electromagnetic and particulate)

Chemical Injuries

- Subdivided into the manner of injury
- Poisoning (accidental, homicidal, or suicidal)
- Drug Reactions
  - Toxic effects of prescription or proprietary drugs taken to treat disease)

Microbiologic Injuries

- Usually classified by the type of offending organism
  - Bacteria
  - Fungi
  - Protozoa
  - Viruses

  - These are called infections and diseases caused are infectious diseases

ENDOGENOUS DISEASES – ACTING FROM WITHIN THE BODY

- Vascular Diseases
  - Obstruction to blood supply to an organ or tissue (myocardial ischemia caused by arteriosclerosis)
  - Hemorrhage (ruptured abdominal aortic aneurysm)
  - Altered blood flow (microvascular changes in diabetes or hypertension)

Immunologic Diseases

- Caused by aberrations to the immune system
- Failure of the immune system to work = immunodeficiency disease
- Overreaction of the immune system causes allergic or hypersensitivity diseases
- Abnormal reaction of the immune system to substances that the body produces = autoimmune diseases

Class Time

- Work on the Body Systems Poster – due Monday, February 9th (no exceptions)
- When finished work on….
- Emergency Room Report in your Medical Terminology Packet – due Monday