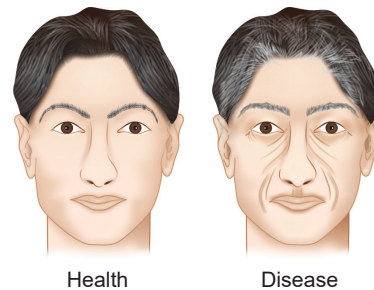


Introduction

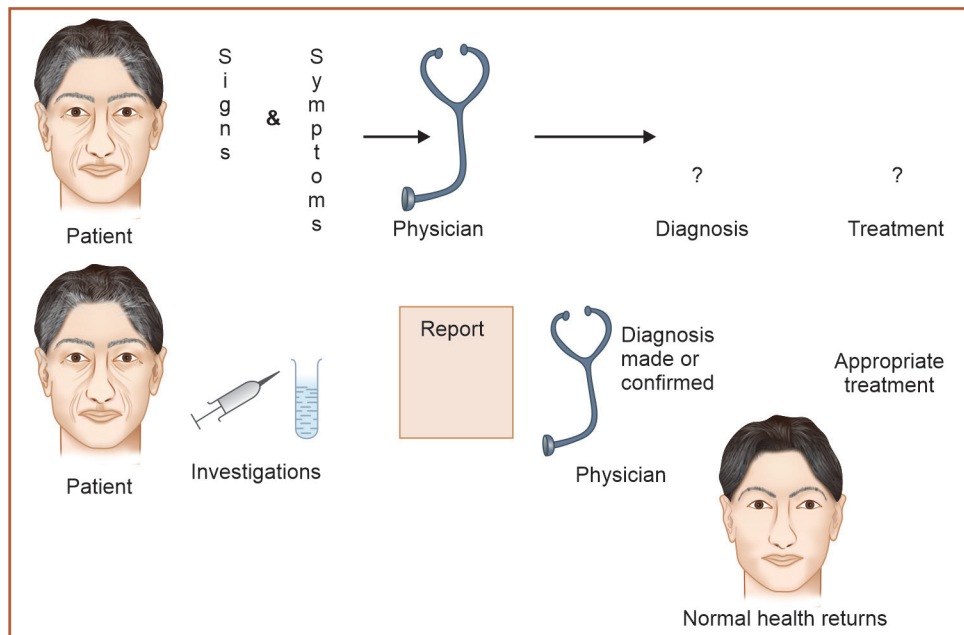
Compare these Figures

Anatomy and physiology include the study of normal human structure and function, whereas pathology is the study of abnormal structure and function together in a diseased man.



What is the significance of pathology?

Well let us study the following:

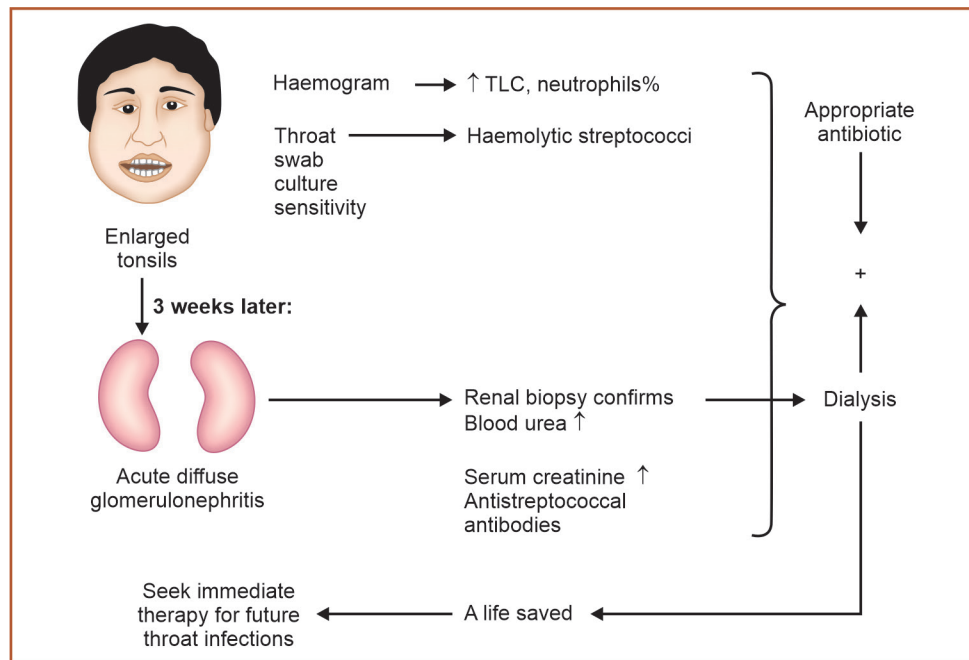


This then clearly represents the importance of studying and understanding pathology.

Broadly speaking diseases can be classified as:

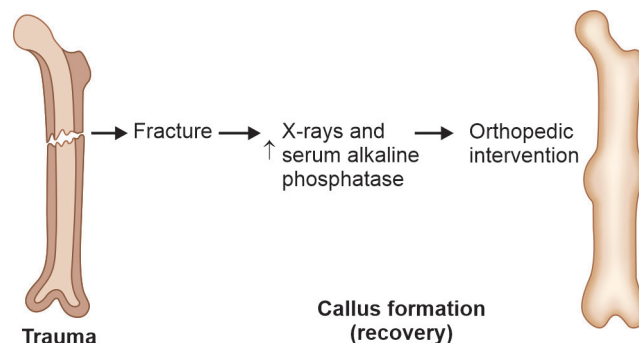
- A. Traumatic
- B. Inflammatory (including infective)
- C. Degenerative (excluding ageing, etc.)
- D. Neoplastic (benign and malignant).

Example I

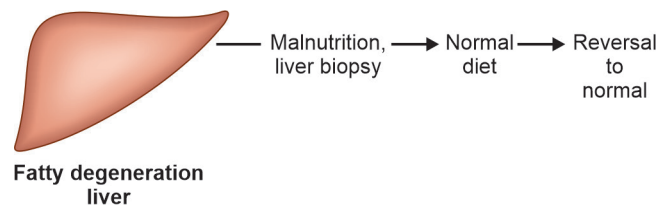
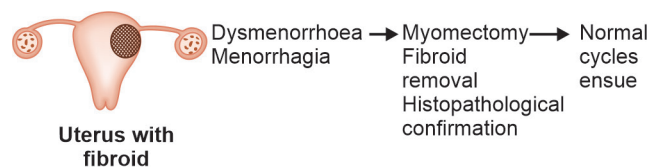


(TLC = Total leucocyte count)

Example II

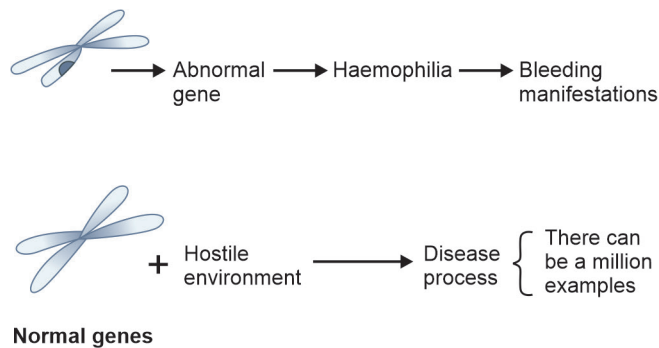


Pathology steps in everywhere. It provides the final diagnosis. Study of disease at tissue and/or cellular level is done and a confirmatory diagnosis is provided for the physician/surgeon to act upon and treat.

Example III**Example IV**

Normal physiological variations do occur, e.g. diurnal variation in haemoglobin, neutrophilia in pregnancy, raised ESR during and after pregnancy, etc. However, when alterations in structure and function occur outside the normal accepted range—it is termed as disease. Diseases may be functional or organic. Functional disorders, by and large, do not fall under the pathologist's domain.

Diseases can also be genetically determined or may be acquired. In the former, the defect lies in the genes and unless the faulty genes are removed and replaced, whatever the environment, disease process will start at some stage. Acquired diseases are not gene-dependent and are produced due to single/multiple environmental factors.



How can disease be detected pathologically and what are the various levels?

- I. **Morbid anatomy:** Study of gross structure of an organ. A large white kidney or a shrivelled firm nodular liver for example.
- II. **Histopathology:** Study of diseased organ or tissue microscopic sections. Typical histopathological features of caseating tubercular lymph node or of cysticercosis brain.

- III. *Cytology*: Study of disease at cellular level. Vaginal/cervical cytology for carcinoma cervix or carcinoma breast cytology.
- IV. *Electron microscopy*: Study at the ultrastructural level. Renal lesions, e.g. dense deposit (electron dense) disease.
- V. The ultimate molecular biology studies to detect changes at the molecular level, e.g. polymerase chain reaction (PCR) and immunohistochemistry (IHC).

Diagnostic medicine has advanced to the molecular level and therapeutic medicine is hovering around genetic engineering.