

Glossary of terms used in Pathology

Abscess

a localised collection of pus in an organ or tissue

Acquired

a lesion occurring due to an event after birth (cf. congenital)

Acquired immunodeficiency syndrome (AIDS)

a disease caused by the human immunodeficiency virus (HIV), resulting in progressive depletion of T-cells necessary for cell-mediated immunity, leading to susceptibility to opportunistic infections and tumours

Adenoma

a benign neoplasm derived from glandular (secretory) epithelial cells

Acute respiratory distress syndrome (ARDS)

respiratory failure caused by diffuse damage to type 1 pneumocytes and alveolar capillaries, often secondary to shock (hence the term "shock lung")

Aetiology

cause of a disease

Agensis

congenital absence of an organ or structure

Allele

one of two alternative genes at a locus that controls a particular characteristic

Allergen

antigen which gives rise to allergic reactions, usually mediated by IgE antibody

Allograft

a tissue graft between two individuals of the same species (synonymous with homograft)

Amyloidosis

extracellular deposition of an insoluble protein complex, usually derived from serum proteins, with a fibrillar structure and a characteristic conformation (twisted beta-pleated sheet); deposits stain homogeneously pink with H & E, and brick-red with a Congo red stain

Anaemia

a significant reduction in the level of circulating haemoglobin below the normal range

Anaphylaxis

an acute hypersensitivity reaction, characterised by bronchospasm, peripheral vasodilatation, hypotension (shock) and oedema (especially laryngeal oedema)

Anaplasia

less than normal differentiation of cells; an important feature of malignant neoplasms

Anergy

the inability to react to a number of common skin test antigens; usually denotes depressed cell-mediated immunity (CMI)

Aneurysm

a localised abnormal dilatation of a vessel due to weakness of its wall

Anorexia

loss of appetite

Antibody

immunoglobulin specifically reactive with a particular antigen

Antigen

a substance which can induce a detectable immune response

Aplasia

congenital disturbance leading to failure of development of a part (synonymous with agenesis)

Apoptosis

a form of individual cell death, particularly observed in physiological turnover, in which the morphological changes consist of nuclear condensation and fragmentation (cf. necrosis)

Arteriosclerosis

refers to a group of processes in which there is thickening and loss of elasticity ("hardening") of arterial walls; it includes atherosclerosis, Monckeberg medial calcific sclerosis, and arteriolosclerosis

Arthralgia

pain (of any cause) in a joint or joints

Arthritis

inflammation of a joint or joints; usually signified by pain (arthralgia), erythema and swelling

Ascites

abnormal accumulation of fluid in the peritoneal cavity

Atelectasis

failure of normal degree of expansion of lung or segments of lung tissue

Atheroma

deposition of lipid in the intimal lining of systemic arteries accompanied by reactive changes in the vessel wall

Atherosclerosis

the commonest disease of arteries, characterised by focal or eccentric thickening of the intima by inflammatory and fibrotic lesions associated with the deposition of lipids; a circumscribed elevated lesion is referred to as an atheromatous plaque

Atrophy

diminution in size of an organ or tissue which had previously reached mature size, due to a decrease in size and/or number of its constituent specialised cells (cf. agenesis, aplasia and hypoplasia)

Autoimmunity

a disease caused by failure of normal immunological tolerance, such that the immune system identifies "self" antigens as foreign

Autolysis

post-mortem digestion of tissue by its own intracellular enzymes

Bacteraemia

the presence of bacteria in the blood (cf. pyaemia and septicaemia)

Benign

in reference to neoplasms, the term indicates strict localisation, growth by expansion, and frequent encapsulation (synonymous with innocent)

Biopsy

sampling of tissue for diagnosis, includes excisional, incisional and needle procedures, and also subsumes many cytological procedures

Boil

a small abscess of the skin, usually originating in a hair follicle or sweat gland (synonymous with furuncle)

Bronchiectasis

abnormal permanent dilatation of the bronchi, which may be localised or diffuse, congenital or acquired; associated with a chronic productive cough and recurrent pulmonary infections

Bulla

a large abnormal thin-walled cavity filled with liquid or gas

Cachexia

extreme wasting of the body, accompanied by weakness, anorexia and anaemia; most commonly seen in the terminal phase of malignancy

Calculus

a stone formed in a hollow tube or viscus, e.g. gallbladder, renal pelvis

Cancer

often used synonymously with carcinoma (see below); also a general term for all malignant neoplasms

Carbuncle

a multilocular abscess resulting from extension of a boil into the subcutaneous tissues

Carcinogen

an agent which can cause a cell to undergo neoplastic transformation, or which may initiate such a process by permanently altering cellular DNA

Carcinoma

a malignant neoplasm derived from epithelium

Carcinoma in situ

a malignant epithelial neoplasm which has not yet invaded through the basement membrane

Catarrh

inflammation of a mucosal surface associated with a mucoid exudate, e.g. nasal catarrh

Cell-mediated immunity (CMI)

immune response in which T-cells and macrophages predominate

Cellular differentiation

process of development of phenotypic characteristics of a mature tissue by selective gene expression

Cellular swelling

a mild degenerative change of cells in which the affected tissues appear somewhat pale and swollen, resulting from failure of the 'sodium pump', permitting the entry of sodium and water into the cell

Cellulitis

a diffuse inflammation of subcutaneous tissue extending along connective tissue planes

Chemokines

peptide molecules that induce chemically-directed migration of inflammatory cells – "*chemoattractant cytokines*"

Chemotaxis

chemically-directed cellular migration

Chronic inflammation

an inflammatory response evoked by a persistent stimulus and characterised by aggregation of inflammatory cells and tissue proliferation rather than exudation

Circumscribed

well defined or demarcated, e.g. circumscribed lesion

Complement

a series of plasma proteins involved in many aspects of the inflammatory response, including opsonisation, chemotaxis and cytotoxicity

Congenital

literally, "born with" a disease; a condition attributable to events prior to birth

Cirrhosis

a chronic diffuse condition of the liver in which necrosis of hepatocytes is accompanied by fibrosis and regeneration, resulting in destruction of liver architecture and ultimate conversion of the parenchyma into numerous nodules separated by fibrous septa

Clone

a group of cells, all of which are the progeny of a single cell

Clot

a semi-solid mass formed from constituents of the blood after death (post-mortem clot), following haemorrhage, or in vitro (cf. thrombus)

Congestion

an excess of blood in the vessels, resulting from too much blood being delivered by the arteries (active congestion; synonymous with hyperaemia), or too little being drained by the veins (passive congestion, as in congestive cardiac failure)

Consolidation

becoming firm or solid: usually applied to the lung in which the alveolar spaces are filled to varying degrees with inflammatory exudate, retained secretions, neoplastic tissue or scar tissue

Cyst

a sac with a distinct wall lined by flattened cells enclosing fluid or other material

Cytokines

protein or peptide molecules mediating pathologically significant cellular reactions

Degeneration

a change in structure and function caused by injury to cells; the change is often reversible

Delayed hypersensitivity (DTH)

cell-mediated immune response elicited by the subcutaneous injection of an antigen, with subsequent oedema and inflammation which are maximal between 24 and 48 hours (cf. immediate hypersensitivity)

Desmoplasia

induction of connective tissue growth, usually refers to the stroma of tumours (synonymous with fibroplasia)

Disseminated intravascular coagulation (DIC)

widespread thrombosis in the microvasculature arising secondary to another illness, resulting in consumption of platelets and clotting factors (often leading to severe haemorrhage), traumatic damage to red cells and ischaemia to vital organs; common causes include septicaemia, obstetric emergencies and malignancy

Diverticulum

a pouch or sac arising from a hollow organ or structure

Dysentery

an inflammation of the colon characterised by pain, rectal tenesmus, profuse diarrhoea, with mucus and blood in the faeces (stool)

Dysplasia

atypical cellular differentiation; may be observed histopathologically within neoplasms or pre-neoplastic lesions

Dystrophic calcification

the localised deposition of calcium salts in dead or degenerate tissue (in the presence of normal plasma levels of calcium and phosphorus)

Dysuria

pain or difficulty with urination

Ecchymosis

a large area of discolouration of skin caused by extravasation of blood into subcutaneous tissues (synonymous with bruise)

Effusion

abnormal collection of fluid in a body cavity

Embolism

the transportation by the blood of abnormal material and its impaction in a vessel at a point remote from its entry into the circulation

Empyema

the presence of pus in a cavity or hollow organ, e.g., empyema of gall bladder

Epidemiology

the study of the incidence, distribution, and determinants of disease in a population, and its application to the control of health problems

Epistaxis

bleeding from the nose

Erythema

redness of the skin resulting from vasodilatation

Exudate

proteinaceous fluid resulting from the selective extravasation of intravascular plasma in response to an inflammatory stimulus; exudate usually has a specific gravity exceeding 1.020 due to its relatively high content of protein and cellular debris (cf. transudate)

Fatty change

the abnormal accumulation of lipid within parenchymal cells

Fibrinoid

a descriptive term for a variety of microscopic changes that occur in various tissues under dissimilar circumstances, in which the affected tissues stain brightly with eosin

Fibrinous

the adjectival form of fibrin - the protein formed by interaction of thrombin and fibrinogen

Fibrous

literally, containing fibres; but often used in Pathology to refer to collagenous connective tissue

Fine needle aspiration (FNA)

a form of biopsy in which a fine needle (usually 25 gauge) is inserted into an area of tissue and a number of cells are collected, then expelled onto a slide and stained for cytological examination

Fistula

an abnormal communication between two body surfaces (cf. sinus)

Fracture

a break in the continuity of bone

Free radicals

highly reactive molecular forms capable of causing injury

Gangrene

necrosis with putrefaction of macroscopic portions of tissue

Goitre

an enlarged thyroid gland

Grade

degree of malignancy of a neoplasm, judged from histological features

Graft versus host disease

the rejection of host tissues that are recognised as foreign by transplanted immunocompetent cells which are capable of replication - usually a complication of bone marrow transplantation; typical manifestations include skin rash, jaundice, vomiting and diarrhoea

Granulation tissue

consists of newly formed blood vessels, fibroblasts and their products, and inflammatory cells: the tissue of repair

Granulomatous inflammation

a form of chronic inflammation; characterised by focal aggregations of chronic inflammatory cells, principally macrophages and their derivatives, e.g., epithelioid cells; these focal lesions are known as granulomas, and may exhibit central necrosis

Hamartoma

a developmental malformation consisting of an overgrowth of tissue(s) proper to the part, sometimes resembling a neoplasm (cf. haematoma)

Haemangioma

a developmental malformation of blood vessels (i.e. an example of a hamartoma)

Haematemesis

vomiting of blood

Haematoma

localised collection of blood or clot in solid tissues

Haematuria

blood in the urine

Haemoptysis

coughing up of blood-stained sputum or gross blood

Healing

the process by which the body replaces damaged tissue with living tissue; healing includes both regeneration and repair

Hernia

the abnormal protrusion of the whole or part of a viscus or other internal structure through an opening

HLA (Human Leucocyte Antigen)

the major histocompatibility (MHC) genetic region in man; important in control of immune responses and graft rejection

Humoral immunity

immune response in which the predominant effector mechanism involves antibodies

Hyaline

a descriptive term for homogeneous, somewhat glassy or refractile microscopic appearance exhibited by various extracellular tissue elements or by the cytoplasm of cells

Hydronephrosis

Abnormal dilatation of the renal pelvis and calyces, often associated with renal cortical atrophy

Hyperaemia

an increased volume of blood within actively dilated vessels in an organ or part of the body (cf. congestion)

Hyperplasia

an increase in size of an organ or tissue due predominantly to an increase in the number of its constituent specialised cells

Hypertrophy

an increase in size of an organ or tissue due predominantly to increase in size of its constituent specialised cells

Hypoplasia

the failure of development of an organ to a full, mature size (cf. aplasia)

Iatrogenic

implies 'caused by doctors', incorrectly derived from Greek root

Immediate hypersensitivity

immune response elicited within a few minutes after exposure to an antigen (allergen) due to the presence of preformed IgE antibodies; demonstrable after intradermal injection as a wheal with surrounding vasodilatation

Immunity

a state of reactivity following exposure to an antigen

Infarct

circumscribed ischaemic necrosis of tissue resulting from interference to blood flow, usually arterial

Infection

the invasion of the body by pathogenic micro-organisms

Inflammation

the process by means of which exudate and cells accumulate in irritated tissues and usually tend to protect them from further injury; may be acute or chronic –when unqualified, the term "inflammation" usually refers to acute inflammation

Inspissated

thickened, e.g. inspissated mucus obstructing an airway

Interleukins

a subset of cytokines originally construed to mediate leucocyte interactions

Ischaemia

a state of inadequate blood supply to a tissue or organ - potentially reversible

Karyolysis

loss of basophilic staining of the nucleus due to the action of DNase, often seen in necrotic cells (cf. pyknosis, karyorrhexis)

Karyorrhexis

fragmentation of the nucleus of a necrotic cell (cf. pyknosis, karyolysis)

Keloid

hypertrophic cutaneous scar, in excess of that necessary to heal the original defect

Lesion

an alteration of structure or of functional capacity due to injury or disease

Leucocytosis

an elevated number of circulating white blood cells

Leucopenia

a decreased number of circulating white blood cells

Leucoplakia

a lesion characterised by whitish thickening of mucosal epithelium

Lithiasis

formation of stones (calculi), e.g., nephrolithiasis, cholelithiasis

Lymphokines

soluble products of lymphocytes (especially T-cells) involved in cell-mediated immune responses (cf. cytokines)

Malignant

literally means virulent or life-threatening; in reference to neoplasms, the term indicates rapid growth, invasion of neighbouring tissues, potential for spread by metastasis, and frequently a fatal outcome; the single most important histopathological criterion of malignancy is tissue invasion

Melaena

tarry black coloured faeces due to altered blood from haemorrhage into the bowel, usually from the stomach or duodenum

Metaplasia

an adaptive substitution of one type of differentiated cell(s) by another type of differentiated cells

Metastasis

in reference to malignant neoplasms, the term refers to the development of secondary growths which arise from, but are discontinuous with, the primary lesion; such is termed a metastasis or metastatic lesion (synonymous with secondary)

Metastatic calcification

precipitation of calcium salts in apparently normal tissue as a result of disturbed calcium-phosphorus metabolism (e.g., hypercalcaemia) (cf. dystrophic calcification)

Monoclonal

attributable to a single clone of cells, and so more characteristic of a neoplastic than a reactive process (polyclonal)

Morphology

the structure of tissues and organs

Mutagen

an agent capable of damaging the DNA structure of cells; initiators of neoplastic transformation are mutagenic

Necrosis

death of cells in a restricted portion of tissue, recognisable by the autolytic changes undergone after the cells have died

Neoplasm

an abnormal mass of tissue, the growth of which exceeds and is uncoordinated with that of the normal tissues, and persists in the same excessive manner after cessation of the stimuli which evoked the change

Occult

hidden, concealed, not evident; as 'occult blood in faeces' requiring special techniques for detection

Oedema

excessive accumulation of fluid causing swelling of tissues

Oliguria

abnormally low urine output (< 400 mL/day)

Organisation

a part of the healing process, occurring after an injury that has destroyed tissue which is unable to regenerate; involves the ingrowth of granulation tissue

Paraneoplastic

effects of a neoplasm not related to either the primary tumour mass or metastatic tumour deposits, e.g. abnormal hormone production, cachexia, etc.

Paraprotein

an abnormal band on serum protein electrophoresis, due to a monoclonal immunoglobulin and often associated with B cell neoplasia

Pathognomonic

characteristic/diagnostic of a particular disease

Pathogenesis

mechanism(s) by which the cause (aetiology) of a disease produces the clinical manifestations

Pathology

the scientific study of diseases

Peptic ulcer

an ulcer occurring in a portion of the alimentary tract exposed to the effect of gastric acid and pepsin

Petechiae

minute rounded spots of haemorrhage on skin, mucous membrane or cut surface of an organ; singular = petechia

Phagocytosis

ingestion of foreign or particulate matter by cells

Phlebothrombosis

formation of a thrombus in a vein

Polymerase chain reaction (PCR)

a molecular diagnostic technique based on amplification by DNA polymerase of a known sequence of genomic DNA isolated from cells, or of DNA reverse-transcribed from mRNA or viral RNA; permits rapid, sensitive and specific detection of e.g. genetic mutations

Polyp

a projecting mass of tissue arising from an epithelial surface; may be composed of neoplastic, inflammatory or other tissues, found especially on mucous membranes

Prognosis

forecast of the outcome of an illness, based on the natural history of the disease and the likely response to treatment

Promoter

an agent, not acting as a mutagen, which causes an initiated cell or cell population to complete the process of neoplastic transformation

Proto-oncogene

a gene present in the normal cell (e.g. *RAS*, *MYC*); when one allele is inappropriately activated may cause or accompany the onset of cellular neoplastic transformation

Purpura

bleeding into the skin and/or mucous membranes, e.g. petechiae (pinpoint), ecchymoses (bruises)

Pus

typically a semi-fluid of creamy colour, pus is composed of necrotic and living neutrophils, together with necrotic tissue cells and exudate

Putrefaction

decomposition of organic matter by micro-organisms, accompanied by the development of disagreeable odour

Pyaemia

the presence of pus-inducing micro-organisms in the circulation with resultant formation of abscesses at sites of their lodgment (cf. bacteraemia and septicaemia)

Pyknosis

shrinkage and increased basophilic staining of the nucleus in a necrotic or apoptotic cell, caused by reduced pH (cf. karyolysis, karyorrhexis)

Regeneration

replacement of parenchymal cells by multiplication of similar surviving cells

Repair

replacement of lost tissue by connective tissue elements and parenchymal cells in varying proportions; when replaced completely by granulation tissue, which later matures to fibrous tissue, the result is referred to as a scar

Resolution

the return of a diseased tissue or organ to normal without residual scarring

Sarcoma

a malignant neoplasm arising from mesenchymal tissue

Sclerosis

hardening of tissue, especially from overgrowth of fibrous tissue

Sepsis

severe infection with marked systemic clinical features; sepsis is usually the expression of rapid and continuous invasion of the blood stream by microorganisms from the tissues, or multiplication in blood stream (cf. bacteraemia and pyaemia)

Shock

a clinical state in which there is widespread inadequate perfusion of tissues

Sign

a clinical feature identified by observation or examination of the patient (cf. symptom)

Sinus

in Pathology, this relates to an abnormal communication between a lesion (e.g., an abscess) in an organ, and an overlying surface (e.g., skin) (cf. fistula)

Staging

assessment of the size and extent of spread of a malignant neoplasm, important in determining the treatment and prognosis

Stem cell

a primitive cell from which differentiated cells arise during development, renewal and maintenance

Suppuration

the formation or discharge of pus

Symptom

a manifestation of disease which the patient may be aware of, or describe

Syndrome

a group of symptoms and signs which, when considered together, characterise a disease or lesion

Telangiectasis

a cluster of dilated malformed blood vessels (usually capillaries) producing a small red focal lesion, most common in skin or mucous membranes

Teratogen

an environmental agent which acts in utero to cause abnormal development, resulting in malformation of the fetus; teratogens include infective agents, radiation, drugs and chemicals

Teratoma

a true neoplasm arising from totipotential cells and therefore composed of numerous tissues which may not be indigenous to the part in which it occurs

Thrombophlebitis

inflammation of a vein (phlebitis) with associated thrombosis

Thrombus

a solid or semi-solid mass formed from the constituents of blood within the intact vascular system during life (cf. clot)

Tolerance

a state of non-responsiveness of cells of the immune system to a particular antigen

Toxaemia

the presence in the blood of toxic products produced by bacteria or formed in body cells

Transudate

fluid accumulated in tissue planes or spaces which is low in protein and which has leaked into the tissues from the micro-circulation; it occurs in non-inflammatory disorders such as congestive cardiac failure and venous obstruction (cf. exudate)

Tumour

a lump or swelling; however, the term is frequently used as a synonym for neoplasm

Tumour suppressor gene

a gene present in normal cells, which acts to suppress cellular proliferation (e.g. *TP53*, *RB*); when both alleles are inactivated, may cause or accompany the onset of neoplastic transformation

Ulcer

a lesion resulting from a circumscribed loss of surface epithelium of variable depth, often accompanied by inflammation of the adjacent tissue

Vesicle

a small blister

Western blotting (immunoblotting)

a molecular diagnostic technique involving separation of proteins by gel electrophoresis, transferring them to a solid membrane via a blotting procedure, incubating with specific antibodies and applying a sensitive technique for detection of bound antibody; often used to detect specific proteins (e.g. viral) present in the serum

Zoonosis

a disease "accidentally" transmitted to humans from an animal host