



Dermatopathology: An abridged compendium of words. A discussion of them and opinions about them. Part 3

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The compendium (Part 3)

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CANCER: A term generic for a neoplasm malignant, i.e., a carcinoma or sarcoma.

CARCINOEMBRYONIC ANTIGEN: abbreviated CEA, is a glycoprotein found in certain normal epithelial tissues, and in some neoplasms composed of epithelial cells, especially adenomas and adenocarcinomas. Common neoplasms that contain carcinoembryonic antigen are adenocarcinomas of the gastrointestinal tract, lung, breast, ovary, endometrium, and cervix, medullary carcinoma of the thyroid, and, less frequently, squamous-cell carcinomas of the lung and cervix. Within normal eccrine and apocrine units, carcinoembryonic antigen is demonstrable in luminal cells of ducts and secretory cells in glands. Some authors maintain, incorrectly in our view, that investigation of carcinoembryonic antigen by immunoperoxidase techniques is helpful for distinguishing proliferations with eccrine differentiation from those with apocrine differentiation.

CARCINOMA: denotes a proliferation malignant of epithelial cells. Carcinomas may be classified histopathologically by aspects cytopathologic (i.e., germinative in trichoblastic (basal cell) carcinomas, spinous in squamous cell carcinoma, and polygonal and plasmacytoid in some apocrine carcinomas) and by differentiation or lack of it (i.e., apocrine or sebaceous for the former, they being adenocarcinomas in contrast to basal cell, squamous cell, and neuroendocrine

carcinoma, and undifferentiated carcinoma or sarcoma for the latter). Trichoblastic (basal cell) carcinoma is considered, conventionally, to be the most common carcinoma in skin, but squamous cell carcinoma is more common by far, the reason being that solar keratosis is more common incomparably than trichoblastic (basal cell) carcinoma and solar keratosis is one type of superficial squamous cell carcinoma, other types superficial of squamous cell carcinoma being arsenical keratosis, radiation keratosis, Bowen's disease, and so called actinic cheilitis.

CATAGEN: designates the involutinal stage of a follicular cycle, during which the inferior segment of a follicle shrivels and shrinks as it ascends along a fibrous track to the base of an isthmus. Catagen is characterized morphologically by the appearance of numerous individual necrotic keratinocytes, referred to popularly as apoptotic cells; (a term we eschew) a thickened, corrugated, glassy membrane; and release of melanin from melanocytes in the bulb into macrophages in the follicular papilla.

CHOLESTEROL CLEFTS: long, needle-like spaces that represent sites from which crystals of cholesterol have been dissolved in tissue by the agents used in processing specimens of tissue in preparation for examination of sections by conventional microscopy.

CHONDROID STROMA: is supporting tissue of a proliferation that bears a resemblance close to that of cartilage, it usually signifying differentiation toward cartilage. Chondroid is homogeneous material that in sections stained by hematoxy-

lin and eosin is basophilic in some foci, eosinophilic in others, and amphophilic in still others. The appearance distinctive of chondroid is attributed to the presence of large amounts of chondroid sulfate. "Chondroid syringoma," for example, is reputed to be a proliferation in which abnormal eccrine glandular structures reside in stroma that resembles cartilage. The term "chondroid syringoma" is a misnomer, however, because that mixed tumor of the skin usually shows apocrine, rather than eccrine (most authors regard syringoma wrongly as being eccrine), differentiation, as well as differentiation infundibular, sebaceous, and follicular, and may be devoid of chondroid, consisting as it does most often of mucin alone.

CHONDROMYXOID STROMA: describes connective tissue that resembles both chondroid and mucin. Chondroid consists of homogeneous material that, in sections stained by hematoxylin and eosin, is basophilic in some foci, eosinophilic in others, and amphophilic in still others. The appearance of chondroid is caused by the presence of large amounts of chondroitin sulfate. Myxoid tissue consists of finely granular basophilic material. Large quantities of chondroid and myxoid are present together in the stroma of cutaneous mixed tumors, i.e., those with apocrine and those with eccrine differentiation.

CIVATTE BODIES: necrotic keratocytes that can be seen in the epidermis (and the upper part of epithelial structures of adnexa) on one hand and in the dermis immediately adjacent to them on the other. Also termed colloid bodies, hyaline bodies, and "apoptotic" bodies.

CLEAR CELLS: in dermatopathology as well as in general pathology, the term "clear cell" appears in designations of a number of proliferations and is also applied in descriptions of a broad variety of conditions such that the meaning of clear cells is unclear. It appears in the term "clear cell acanthoma" to designate keratocytes with a pale staining cytoplasm. In "clear cell papulosis" the "clear cells" are most likely of apocrine differentiation and scattered among basal cells. In the terms "clear cell eccrine porocarcinoma," "clear cell porocarcinoma in-situ," and "eccrine syringofibroadenoma of clear cell variant, pale neoplastic cells are also of glandular differentiation, either eccrine or apocrine. In "clear cell trichoblastoma" clear cells have been confirmed to represent an attempt at differentiation toward the outer sheath at the bulb.

Carcinomas as well as sarcomas have been told to be typified by "clear cells," which actually did not have a clear cytoplasm but were filled with granular material. The "prefix" "clear cell" has also been added to dermatofibroma with pale spindle cells, to fibrous papule with dermal aggregates of clear cells with finely granular to vacuolated cytoplasm and to atypical fibroxanthoma with pleomorphic spindled and polygonal cells with clear cytoplasm. A type of sebor-

rheic keratosis with "basal clear cells" has been described. Hemangioblastomas have been told of having clear cells staining positive for neuron-specific enolase but not cytokeratin or epithelial membrane antigen. From the conditions just mentioned, it is obvious that the term "clear cell" is applied to cells of completely unrelated differentiations. There are examples of cells that seem to have a clear cytoplasm but to which the term "clear cells" is usually not applied. It is important to identify clearly, what the meaning is of "clear cell differentiation" in dermatopathology.

The following examples demonstrate compellingly that the term "clear cell" has been applied to very different types of cells: epithelial cells of apocrine differentiation, epithelial cells of eccrine differentiation, epithelial cells of tricholemmal differentiation, benign epithelial cells of spinous differentiation, malignant epithelial cells of spinous differentiation, malignant mesenchymal cells of unknown differentiation, and foamy macrophages. All these cells have one feature in common, namely, that their cytoplasm does not stain well with H & E. In most of the cell types, the cytoplasm actually stains, though faintly or in a granular or vacuolated fashion. Apart from that, however, the cells are very different from one another and they can be told apart either by their cytologic features or by the context in which they appear. The reasons for cytoplasm not staining with H & E are as various as are the types of cells designated "clear." Some cells are filled with mucin, some with glycogen, and some with lipids that are resolved completely during processing.

Actually, the term is best avoided. Instead, cells and tissues should be described precisely; taking into account the context in which they appear in order to identify the differentiation of a tissue with near surety. Cells should be described precisely as polygonal, round, or spindled; the cytoplasm should be named as being homogenous, granular, or vacuolated; nuclei should be identified as centered or excentric, round, scalloped, or flat, pleomorphic or monomorphic; and a tissue should be designated as being cohesive or loose. Moreover, careful note should be taken of the context in which such cells appear, i.e., the presence together with tubules (i.e., hidradenoma), with cells arranged in a palisade (i.e., trichilemmoma), with proliferations of vessels (i.e., metastasis of renal cell carcinoma), or with spinous cells (i.e., Bowen's disease.) Those features will in most instances permit identification of the differentiation with near surety, whereas the observation of "clear cells" does not allow any differentiation.

CLEFT: denotes an empty space, i.e., one that does not contain fluid, in contrast to a blister, i.e., of bullous pemphigoid, to some cysts, i.e., apocrine hidrocystoma, and to some cystic hamartomas, i.e., steatocystomas. A cleft may appear in the epidermis, i.e., as in focal acantholytic dyskeratosis of Darier's

disease; immediately below the epidermis, i.e., a Max Joseph space of lichen planus; between epithelial cells and adjacent stroma, i.e., in trichoblastic (basal cell) carcinoma; and between stroma peculiar of a benign proliferation and contiguous normal connective tissue, i.e., in trichoblastoma. The spaces in each of these circumstances are thought to result from retraction of tissue during fixation or processing of a biopsy specimen. In fact, in the differentiation of benign from malignant proliferations by pattern analysis and particularly their silhouettes the aforementioned concept can be used. In benign proliferations usually there are clefts between compactly arranged fibrous tissue of altered stroma and fibrous tissue of normal skin. In malignant proliferations usually there are clefts between neoplastic cells and altered stroma.

CLICHÉ (AND PLATITUDE): phrase or opinion that is over used and lacks original thought.

Avoid clichés! A person who employs clichés becomes a cliché! And clichés are ubiquitous in dermatology and pathology in general and in dermatopathology in particular, the realm of inflammatory skin diseases being no exception. Platitudes like “plasma cells are not seen in lichen planus and in discoid lupus erythematosus,” “parakeratosis does not occur in discoid lupus erythematosus” and “Touton giant cells are necessary for diagnosis of juvenile xanthogranuloma” lead, inevitably, to misdiagnosis because each of those assertions is dead wrong. Trite questions like “Is it DLE (discoid lupus erythematosus) or SLE (systemic lupus erythematosus)?” “Is it morphea or scleroderma?” and “Is it small plaque parapsoriasis or mycosis fungoides?” are predicated on woefully faulty premises and invoke answers given reflexly that are plain incorrect.

Images like “corps ronds and grains” (don’t think of Darier’s disease only!), “dilapidated brick wall” (don’t think of Hailey-Hailey disease only), “tombstone pattern” (don’t think of pemphigus vulgaris only!), “festooning” (don’t think of porphyria cutanea tarda only!), “flame figures” (don’t think of Wells syndrome [which is a response to assaults by an arthropod] only!), “ground-glass cytoplasm” (don’t think of reticulohistiocytic granuloma only!), and “saw tooth pattern” (don’t think of lichen planus only!) may be picturesque, but none of them lend themselves to definition meaningfully by those who mouth them. Moreover, not a single one of those whimsical mental pictures has specificity.

COARSE COLLAGEN BUNDLES IN VERTICAL STREAKS: collagen bundles thicker than normal for the papillary dermis and oriented parallel to one another and to elongated rete ridges (as well as to exaggerated infundibula), and perpendicular to the surface of the skin, the papillary dermis being thickened markedly. The “streaks” signify persistent forceful rubbing of skin, as occurs in lichen simplex chronicus and its variant, prurigo nodularis. Those conditions are typified also

by compact orthokeratosis, hypergranulosis, acanthosis, and proliferation of infundibular and sometimes eccrine ductal, keratocytes. Distinctive changes of lichen simplex chronicus may be produced in pruritic skin that, prior to the effects of prolonged rubbing of it, was normal clinically, or they may be imposed on a variety of itchy inflammatory skin diseases, such as lichen planus, i.e., hypertrophic lichen plasmas, allergic contact dermatitis, and dermatophytosis, deposits as in macular amyloidosis, i.e., amyloidosis and neoplastic diseases like mycosis fungoides.

COARSE MELANIN: large granules of melanin of irregular sizes and shapes usually found within the cytoplasm of macrophages or keratocytes.

COLLAGEN: designates an albuminoid substance of white fibers in connective tissue and bone that yields gelatin on boiling. It is the most common protein in the animal world, the major product of fibrocytes, and the extracellular framework for all multicellular organisms. Collagen, when viewed through a conventional microscope in sections of skin stained by hematoxylin and eosin, is seen to be arranged in two different patterns, namely, thin bundles in the papillary and periadnexal dermis and thicker bundles in the reticular dermis and septa of the subcutaneous fat. By electron microscopy, collagen fibers, irrespective of whether they are arranged in thin or thick bundles, have characteristic cross striations with a periodicity of 68 nm. A score or more types of collagen, different in composition of amino acids and in antigenicity, are recognized currently. Collagen accounts for approximately 75% of the dry weight of skin and provides it with both tensile strength and elasticity.

COLLAGENIZATION: means formation of collagen within growing or healing tissue. In dermatopathology, the term also is used to describe the markedly thickened bundles of collagen in the stroma of some neoplasms such as some congenital nevi colloquially called blue nevi and carcinoma from a breast metastatic to skin.

COLLARETTE OF EPITHELIUM: describes bowing inward of epithelial structures superficial in skin, i.e., infundibula and eccrine ducts, in a manner that encloses partially a variety of processes pathologic, i.e., the hyperplasia of small blood vessels of pyogenic granuloma, the epidermal keratocytes of verrucae vulgares, the benign proliferations of epidermal keratocytes in seborrheic keratosis and pale cell acanthoma, and the benign proliferations of cells adnexal in trichoblastoma and apocrine mixed tumor.

COLLOID BODIES: are necrotic keratocytes, also known as Civatte bodies, hyaline bodies, and apoptotic bodies.

COLUMN: a row of more than two cells, either ones epithelial or nonepithelial, as may occur, for example, in a

hamartoma, i.e., giant hairy congenital nevus, or neoplasm, i.e., melanoma.

COMEDO: a dilated infundibulum stuffed by cornified cells arranged compactly or in laminated fashion and containing sebaceous secretion, and microorganisms, to wit, bacteria, yeasts, and mites of the normal skin flora. The ostium of a comedo is said, colloquially, to be either “open” or “closed.” In reality, all comedones are “open,” some more than others, because each comedo has access directly to the surface of the skin through an ostium at the summit of infundibular epidermis. If a comedo ruptures, its contents are discharged into the dermis and sometimes, into the subcutaneous fat, too, where ensues a suppurative, then granulomatous and, sometimes, fibrosing response. Comedones are nearly invariable in acne vulgaris, where they are characterized clinically by dark casts of dilated infundibula dubbed by the laity “blackheads.” Comedones may develop secondary to occlusion (such as by machine oils) and to severe longstanding damage by sunlight (“senile” comedones, better termed “solar” comedones). Groups of solar-induced comedones in the midst of prominent elastotic material in the skin above the zygoma constitute nodular elastoidosis (Favre-Racouchot syndrome). Steroid acne refers to comedones and pustules that are induced by prolonged administration of corticosteroids systemically or by application topically.

COMPACT ORTHOKERATOSIS: describes the arrangement cohesive of orthokeratotic cells in a stratum corneum as it is viewed through a microscope conventional. The term does not apply to the normal pattern formed by corneocytes on palms and soles, but to the abnormal arrangement of them elsewhere on the integument, i.e., as occurs in response to vigorous, long standing rubbing of skin in lichen simplex chronicus or as an effect expected of the inflammatory process of lichen planus. In actuality, the term should be compact orthohyperkeratosis, but the word is clumsy; compact orthokeratosis has come to imply orthohyperkeratosis and, therefore, it suffices.

COMPOUND NEVUS: a nevus in which aggregations of melanocytes are present in both the epidermis and the dermis. The term conveys information about where in the skin collections of melanocytes are situated, but it tells nothing about the character of the nevus itself as does naming the nevus when possible. (i.e., Clark’s, Spitz’s, Reed’s, Miescher’s, or Unna’s, etc.). (SEE ATYPICAL MELANOCYTIC HYPERPLASIA)

COMPRESSED FIBROUS TISSUE: the appearance of amalgamation of bundles of collagen in a rim that encircles a structure whose border is circumscribed sharply and is smooth, such as a cyst, a benign proliferation solid cystic or a benign proliferation solid, the signs of compression being a conse-

quence, *in vivo*, of the expansion very slowly over a long period of time of the structure epithelial.

CONCENTRIC EOSINOPHILIC FIBROPLASIA: a description of wiry bundles of collagen that are arrayed parallel to one another and to elongated epidermal rete ridges, and situated immediately beneath a proliferation of melanocytes disposed mostly as solitary units and/or in tiny nests at the dermoepidermal junction. The finding usually is mentioned in the context of “lamellar fibroplasia,” the latter consisting of wiry bundles of collagen parallel to one another at the base of rete ridges and positioned immediately beneath nests of melanocytes there. In actuality, concentric and lamellar fibroplasias are a continuum, being the same phenomenon viewed differently by virtue of orientation different. Moreover, although “concentric eosinophilic fibroplasia” and “lamellar fibroplasia” were asserted repeatedly by Clark to be two of five criteria requisite for diagnosis histopathologic of the so-called dysplastic nevus (the other three being “persistent lentiginous melanocytic hyperplasia,” “atypical melanocytic hyperplasia” [melanocytic dysplasia], and “lymphocytes”), wiry bundles of collagen in “concentric” and “lamellar” array also are encountered at times in nevi of other types, such as “classic” Spitz’s nevus, and in some melanomas.

CONGENITAL: literally means present at birth and it is the opposite of acquired.

The term, in dermatology and dermatopathology, is used figuratively because some congenital lesions are not apparent at birth. Certain clinical and histopathologic findings are characteristic of nevi that, without a doubt, are present at birth. When those criteria are fulfilled, a nevus can be affirmed as congenital, no matter when it appears. In other words, although not all congenital nevi are apparent at birth, they surely are not becoming melanized markedly until puberty. That circumstance fulfills an essential criterion for the term congenital as defined in the Oxford English Dictionary—namely, “dating from one’s birth,” not necessarily being evident at one’s birth. That distinction is crucial to resolving the apparent contradiction of congenital nevi that seem to be acquired, and an understanding of this concept is essential if a classification of nevi predicated on their being congenital or acquired is to be logical.

A congenital abnormality may result from genetic factors, i.e., Down syndrome, Hailey-Hailey disease, epidermolysis bullosa simplex, or environmental factors that exert their effects in utero, i.e., hypoxia; infections such as syphilis, hepatitis, and human immunodeficiency virus (HIV); amniotic bands; or a combination of these.

CONNECTIVE TISSUE: refers to tissues that originate from mesenchyme. It consists of a cellular component (undifferen-

tiated mesenchymal cells, fibrocytes, adipocytes, mast cells, etc), an extracellular component replete with fibers (elastin and collagen), and a ground substance or matrix (highly sulfated glycosaminoglycans especially). The term “connective tissue diseases”, applied to the constellation of systemic lupus erythematosus, dermatomyositis, scleroderma, rheumatoid arthritis, and Sjogren syndrome, is accurate because those diseases are abnormalities of connective tissue, but so, too, are a host of other conditions, such as pseudo xanthoma elasticum, Ehlers-Danlos syndrome, and Hurler syndrome; all of them are “connective tissue diseases.”

CONNECTIVE TISSUE MUCIN: pertains to mucinous substances produced by connective tissue cells, in contrast to similar substances that are manufactured by epithelial cells. Epithelial mucins in the skin are characterized by their high content of neutral glycoproteins, whereas connective tissue mucins contain highly sulfated glycosaminoglycans. The mucin in focal mucinosis, myxedema, pretibial myxedema, scleromyxedema, discoid lupus erythematosus, and dermatomyositis, to mention but a few examples, is made by fibrocytes and, therefore, is connective tissue mucin. Mast cells usually are numerous in connective tissue mucin, but not in epithelial mucin.

CONNECTIVE-TISSUE NEVUS: a hamartoma of the dermis and/or subcutaneous fat. When the papillary dermis is involved mostly, the lesion resembles numerous “skin tags”; when the reticular dermis is involved mostly, the abnormality may be of collagen, elastic tissue, acid mucopolysaccharides, or any combination of them, as in shagreen patch and elastic tissue nevus. When the subcutaneous fat is the site, the result is nevus lipomatosis.

CONVENTIONAL MICROSCOPY: is synonymous with light microscopy, in contrast to electron microscopy.

CORD: when employed clinically, designates a string-like or rope-like structure in or beneath the skin, and, when used histopathologically, a row of cells, two in width. In contrast to a cord, a strand is cells in a single file and a column is more than two cells wide. Examples of a cord visible clinically are a vein affected by thrombophlebitis and “a rope” formed by an infiltrate composed of mostly epithelioid histiocytes in interstitial granulomatous dermatitis with arthritis. Examples of cords observable through a microscope conventional are those epithelial (mantle cells) in fibrofolliculomas and those nonepithelial (glomus cells) in glomangiomas. Strands of cells (abnormal melanocytes) are “splayed” between bundles of collagen in the reticular dermis in conditions such as the superficial and “deep” type of congenital melanocytic nevus and they (abnormal apocrine cells) are interposed between bundles of collagen in a metastasis of carcinoma from the breast.

CORD OF MELANOCYTIC NEVUS CELLS: a column of nevus cells usually two cells wide and of variable length.

CORNIFICATION: is a process normal whereby epidermal, follicular, and unguinal cells generative (germinative or matrical) mature to become corneocytes. In the process of maturation, germinative cells of the epidermis assume different appearances as they evolve from basal through spinous and granular stages to eventually becoming cornified fully. The increased number and density of keratin intermediate filaments and the organization of them into tonofilaments, the development of tonofilaments desmosomes complexes and formation of keratohyaline granules contribute to the flattening of the cells as they move away from the basal layer en route to death and desquamation. The cornified cells of the epidermis, surface and infundibular, constitute the stratum corneum; those in a follicle, the hair itself and the inner sheath; those in the nail unit, the nail itself.

CORNIFIED CELL OR CORNEOCYTE: is the end product of the process of cornification. A normal cornified cell is anucleate, thin, flat, and eosinophilic when stained by hematoxylin and eosin and viewed by conventional microscopy. By electron microscopy, the cytoplasm of a normal corneocyte is characterized by densely packed tonofilaments and is devoid of cellular organelles. Cornified cells of the stratum corneum protect an organism by acting as a barrier against noxious agents of various kinds. Cornified cells in hair follicles are present in the inner sheath, and hair shaft, and in the nail unit they are found in the nail plate. The uppermost parts of eccrine and apocrine ducts also cornify; squames are corneocytes that have become detached from one another, as happens in an infundibular type of follicular cyst, especially after that cyst ruptures. Keratin, a fibrous protein, is present in all cells of cornifying epithelium. Cornified cells are composed almost entirely of keratin. It is inaccurate, however, to use keratinized cells as a synonym for cornified cells, because although corneocytes are made up of keratin, not all cells that contain keratin are corneocytes. Horn cells and horny cells are imprecise designations for cornified cells.

CORNOID LAMELLATION: a column of parakeratosis that derives from epidermis, including the infundibular epidermis, or eccrine ducts, with vacuolated and dyskeratotic cells just beneath it. It is a requisite for histopathologic diagnosis of porokeratosis in any of its different expressions. It may appear in other proliferations and dermatoses.

CORRUGATED: means wrinkled by parallel alternations of ridges and grooves. A normal basement membrane of an inferior segment of a follicle becomes corrugated markedly in the course of catagen. A normal sebaceous duct is stamped by a corrugated, crenulated, scalloped, or notched appearance.

CORYMBIFORM: conveys the sense clinically of a group of lesions that resembles a cluster of flowers, specifically, having a central pistil (i.e., “mother lesion”) and surrounding petals (i.e., “daughter lesions”), as may be seen in warts and molluscum contagiosum. The term also may be applied histopathologically (e.g., to the pattern formed by proliferation of cells in some trichoblastomas and trichoblastic carcinomas).

CRIBRIFORM: characterizes a pattern like that of a sieve formed by a mesh of cords of epithelial cells and by stroma fibrotic or mucinous, the latter being the equivalent of perforations. The example consummate of pattern cribriform is met with in trichoepithelioma, a type of trichoblastoma in which fibrous tissue serves as the “perforations”, and in cribriform carcinoma, a variant of apocrine carcinoma, in which small holes of fibrous tissue seem to “perforate” cords of epithelial cells. The pattern formed by adenoid cystic carcinoma, another variant histopathologic of apocrine carcinoma, and by adenoidcystic trichoblastic (basal cell) carcinoma also is cribriform, but in those two conditions, mucin fills the “holes” in the “sieve.” The term “cribriform” has application clinical too, i.e., the appearance sieve-like of nevus comedonicus, of atrophoderma vermicularis, and of scars atrophic in lesions long-standing of discoid lupus erythematosus.

CRITICAL LINE: refers to the boundary between the bulbar matrix below and the bulbar supramatrical zone above. It was described first by Auber, in 1852, and refers to an imaginary line drawn across the bulb at the site where a follicular papilla is widest.

CRUST: a collection of serum that contains white blood cells, red blood cells, or both. The honey-colored crusts of impetigo consist of serum and leukocytes. A hemorrhagic scab of an abrasion is made up of serum, some leukocytes, and many erythrocytes. Vegetations are heaped-up crusts that may come to pass in diseases such as pemphigus vegetans and pyoderma vegetans. Necrotic keratocytes, parakeratotic cells, fibrin, and bacteria may be found in crusts of any kind, but particularly in those termed vegetations.

CUBOIDAL: polygonal cell. Different cells in the epidermis and dermis may assume this shape (i.e., suprabasal keratocytes, melanocytes, apocrine, and eccrine ductal).

CUTICLE: applies to more than one structure in the skin. There are two cuticles in a follicle, one being at the innermost margin of the inner sheath and the other being the cuticle of the hair. Both cuticles are derived from matrical cells that differentiate into flat imbricated cells that resemble tiles on a roof. Cuticular cells of the inner sheath point down, whereas those of the hair are directed up. These sets of apposed cornified cells interdigitate and lock a hair firmly in a follicle. When hair and inner sheath are separated from each other in

the processing of sections of tissues, the cuticles are seen to have a distinct sawtoothlike appearance. Cuticular cells of the inner sheath possess trichohyalin granules before cornification, whereas cuticular cells of the hair do not.

CUTICULAR CELL: is one with a round nucleus and abundant eosinophilic cytoplasm that lines a duct of an apocrine or eccrine gland and is a component expected in aggregations of poromas and porocarcinomas (apocrine and eccrine) in which tubules form (the other component of the proliferation being a poroid cell.) (SEE POROID CELL)

CYLINDROID: means resembling a cylinder, as in the shape of aggregations of cells in a cylindroma. Cylinder-like aggregations of epithelial cells also may be found in other proliferations, such as spiradenoma and some trichoblastic (basal cell) carcinomas.

CYST: signifies an epithelium-lined round or oval sac that houses fluid, cells, or both. In the skin, epithelium of a cyst almost always is of an adnexal structure, and the contents of the cyst represent the maturation product of that epithelium, for example: infundibular cyst (also termed epidermoid cyst) lined by epithelium that resembles the infundibular portion of a follicle which is indeed part of the epidermis because of its basal, spinous, granular, and cornified layers, the cornified cells of the latter forming the contents of the cyst and being arranged in basket-woven or laminated pattern; isthmic-catagen cyst (also termed sebaceous cyst and tricholemmal cyst) lined by epithelium that includes the isthmic portion of an outer sheath of a follicle and the outer sheath at the base of a follicle advanced somewhat in catagen, because it lacks a granular zone, but possesses a corrugated inner surface and houses cornified cells arranged compactly; and apocrine gland cyst (also termed apocrine hidrocystoma) lined by epithelium that shows “decapitation secretion” like that of a normal apocrine gland and encloses apocrine secretion. Only rarely are true epidermal cysts formed in skin, and they are thought to be inclusion cysts that result from penetrating injuries to a palm or sole. Cystic means resembling a cyst. A true cyst is non-neoplastic.

CYSTIC: means resembling a cyst. By implication, a cystic structure is not a true cyst because it is not a non-neoplastic epithelium-lined sac that houses fluid, cells, or both. Syringocystadenoma papilliferum, apocrine cystoadenoma, and apocrine cystoadenocarcinoma are examples of cystic conditions, but none of them qualifies as an authentic cyst. Neither does steatocytoma, which is a cystic hamartoma.

CYSTULE: is a neologism coined by Ackerman and Böer for the purpose of designating, small structures histopathologic typified by a lumen round and an epithelium enveloping, in contrast to structures characterized by a lumen long with a

lining epithelial more or less parallel to it, the latter being termed by us, generically, "tubule." The only word extant currently equivalent to cystule is "microcyst," but that is not an analogue of tubule and, moreover, everything observed through a microscope is "micro." Cystules are encountered in proliferations benign and malignant, the former being exemplified by those in syringoma and the latter by those in syringomatous carcinoma. Papillations may project from the lining into the lumen of a cystule, as occurs in apocrine papillary adenoma and apocrine papillary carcinoma. Tubules predominate overwhelmingly in tubular adenoma and tubular carcinoma.

CYTOKERATINS: is a family of intracellular, water-insoluble, fibrous proteins present in almost all epithelia. They are

markers of epithelial differentiation in neoplasms that exhibit endodermal, neuroectodermal, mesenchymal, or germ-cell character.

CYTOLOGY: refers to the study of normal cells, in contrast to histology, which is the study of normal tissues.

CYTOPATHOLOGY: is the study of abnormal cells. Undue emphasis on cytopathologic features in histopathologic examination of a proliferation may lead to misinterpretation of benign ones as malignant, and vice versa.

CYTOPLASM: is the protoplasm of a cell exclusive of the nucleus. The entire cellular mass, called protoplasm consists of nucleoplasm (nuclear mass) and the residual volume, i.e., cytoplasm.