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Dermoscopic structures and their histopathological and clinical correlations

By Vixey Silva, DO, Victoria Starzyk, DO, and Mohammad Fardos, DO



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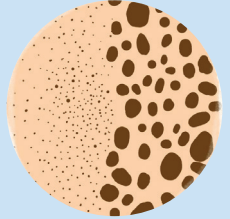
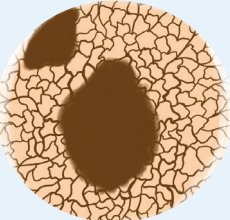

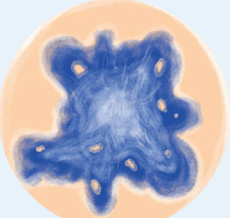



Mohammad Fardos, DO, is a PGY-3 dermatology resident at Largo Medical Center in Florida.

Dermoscopic structure	Definition	Histopathologic findings	Clinical correlates	Image
Pigment network	Configuration of fine, interconnected brown or black lines with hypopigmented holes, reminiscent of a net, mesh, and/or honey-comb	Lines are composed of melanin or melanin-containing cells within the epidermis arranged along elongated rete ridges. The holes represent the tips of the dermal papillae and suprapapillary plate	Melanocytic nevus Dysplastic nevus Melanoma	
Pseudo-network	An area with diffuse pigmentation interspersed with non-pigmented adnexal openings on the skin's surface, resembling a pigment network	Melanin or melanin-containing cells located within the epidermis and dermoepidermal junction that is interrupted by follicular openings	Solar lentigo Pigmented actinic keratosis Seborrheic keratosis	
Structure-less areas	Regions on the skin devoid of discernible patterns or specific structures including regression structures. These areas are at least 10% the size of the entire lesion and are usually hypopigmented when compared to the surrounding lesion	Relative flattening of the rete ridges and dermal papillae. There may also be a scattering of melanin and melanin-containing cells within the dermal layers and suprabasilar epidermal layers	Melanocytic nevus Dysplastic nevus Melanoma	
Negative pigment network	Hypopigmented ser-piginous interconnecting lines interweaving throughout the lesion that surround pigmented globular structures	Thin elongated rete ridges with melanocytic nests within widened dermal papillae. This can also be a result of dermal papillae bridging	Spitz nevus Melanoma	

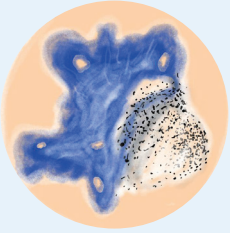
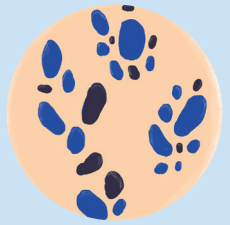
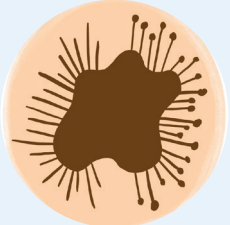

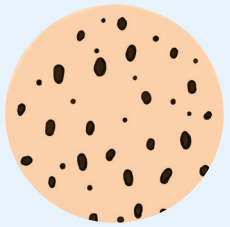
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Dermoscopic structure	Definition	Histopathologic findings	Clinical correlates	Image
Dots/globules	<p>Dots: Brown, black, gray, and/or blue small, round, or oval structures that are <0.1mm in diameter</p> <p>Globules: Same as dots, however, the size of globules are >0.1mm in diameter</p>	Localized pigment accumulation in melanoma cells, melanophages, melanocytes, and keratinocytes. Color-dependent findings can suggest the location of pigment. Black structures indicate pigmentation of the stratum corneum. Brown structures indicate intra-epidermal melanin accumulation. Blue structures indicate dermal involvement	<p>Melanocytic nevus</p> <p>Dysplastic nevus</p> <p>Melanoma</p>	 <p>Left: Dots Right: Globules</p>
Blotches	Uniform brown-to-black pigmented areas that obscure underlying structures. These structures make up at least 10% of the lesion's size	Accumulation of melanin predominantly in the stratum corneum, although typically within all layers of the epidermis. Melanin may also be located within the dermis	<p>Melanocytic nevus</p> <p>Dysplastic nevus</p> <p>Melanoma</p>	
Crystalline structures	Shiny, reflective structures resembling crystals or glass shards on the skin's surface. These structures can only be visualized by polarized light due to its refractile elements	Although not clearly defined, speculation suggests it correlates to increased or altered collagen within the superficial dermis and/or compact orthokeratosis	<p>Dermatofibroma</p> <p>Scars</p> <p>Basal cell carcinoma</p> <p>Lichen planus-like keratosis</p>	
Blue-white veil	Structureless focal blue zone with a "ground glass" white haze overlying the lesion usually overlying a palpable area. The blue-white veil can also overlie the entire lesion	<p>White color is composed of compact orthokeratosis with or without hypergranulosis and acanthosis</p> <p>The blue color is comprised of melanophages, melanocytes, or aggregates of melanin located within the dermis</p>	<p>Melanoma</p> <p>Blue nevus</p>	
Peppering/granularity	Multiple small, dark, usually blue-gray dots, speckles, and/or grain-like structures within a lesion	Melanophages with intracellular melanin or free extracellular particles of melanin scatter throughout the superficial dermis	<p>Melanoma</p> <p>Lichen planus-like keratosis</p>	




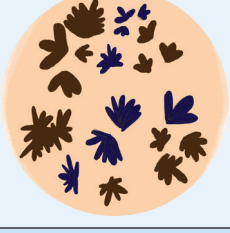

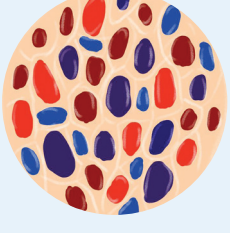
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Regression structures	Blue-gray areas and white depigmented areas that can appear as shiny streaks under polarized light, usually seen in combination with multiple clustered blue-gray dots (peppering)	Thickened collagen within the dermis representing fibrosis, melanophages with intracellular melanin, free extracellular melanin, with or without lymphocytes	Lichen planus-like keratosis	
Blue-gray ovoid nests	Large, ovoid, or elongated blue-gray structures. These are larger than globules	Melanin deposited in pigmented basal cell carcinoma tumor nests within the dermis, DEJ, and/or superficial dermis	Basal cell carcinoma	
Pseudopods/ radial streaming	<p>Pseudopods: linear dark brown to black projections resembling "lollipops," located around the periphery of a lesion extending outward into the surrounding normal skin</p> <p>Radial streaming: dark, brown to black linear finger-like projections extending outward from the main body of a pigmented skin lesion into surrounding normal skin</p>	Intraepidermal or junctional confluent radial nests of melanocytes	Melanoma Pigmented spindle cell nevus	 Left: Radial streaming Right: Pseudopods
Milia-like cysts	Small, round, shiny white or yellowish structures embedded within the lesion usually with a translucent hue overlying, resembling milia	Intraepidermal keratin cysts	Seborrheic keratosis	
Crypts (comedo-like structures)	Small, round, or oval structures with a central dark brown to black plug or core, resembling comedones	Epidermal invaginations filled with keratin	Seborrheic keratosis	

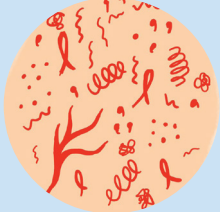
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Ridges and fissures	Ridges: elevated, linear, or curvilinear structures Fissures: shallow, linear depressions Together, ridges and fissures form a cerebriform surface	Alternating wedge-shaped, linear epidermal invaginations of epidermis typically filled with keratin	Seborrheic keratosis	
Fingerprint-like structures	Thin, elongated curvilinear brown lines that do not interweave to form a network, resembling a fingerprint	Darker areas, resulting from projections of the rete ridges, and lighter areas, resulting from projections of the dermal papillae contribute to fewer network-like patterns	Seborrheic keratosis	
Moth-eaten border	Distinct, clearly defined concave invaginations along the border of the lesion	Uneven distribution of melanin and melanin-containing cells in the epidermis at the edge of a lesion resulting in abrupt transition from the pigmented lesion and the surrounding normal skin	Solar lentigo	
Leaf-like areas	Brown to gray-blue distinct bulbous formations resembling a leaf	Nests of pigmented epithelial nodules of basal cell carcinoma in the upper dermis	Basal cell carcinoma	
Spoke-wheel-like structures	Brown to gray-blue lines radiating outward from a central brown area, creating a spoke-wheel appearance	Aggregates of pigmented basal cell carcinoma tumors originating from the lower surface of the epidermis and extending radially to the surrounding dermis	Basal cell carcinoma	
Lacunae	Small red, blue, maroon, purple lagoons	Dilated vascular spaces in the papillary dermis	Angiomas Angiokeratoma	

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Vascular structures	Red-to-pink blood vessels that can appear in a variety of patterns: arborizing, hairpin, milky-red globules, glomerular, comma, dotted, linear, irregular, polymorphous, corkscrew, crown, strawberry, string of pearls	Increased concentration of blood vessels or dilated blood vessels within the papillary dermis	<p>Arborizing vessels: basal cell carcinoma</p> <p>Hairpin vessels: seborrheic keratosis, squamous cell carcinoma, keratoacanthoma</p> <p>Milky-red globules: melanoma</p> <p>Glomerular vessels: squamous cell carcinoma, Bowen's disease, melanoma</p> <p>Comma vessels: intradermal nevi</p> <p>Dotted vessels: intradermal nevus, spitz nevus, squamous cell carcinoma</p> <p>Linear irregular vessels: basal cell carcinoma, melanoma, dysplastic nevus</p> <p>Polymorphous vessels: melanoma</p> <p>Crown vessels: sebaceous hyperplasia, molluscum contagiosum</p> <p>Corkscrew vessels: melanoma</p> <p>Strawberry pattern: actinic keratosis</p> <p>String of pearls: clear cell acanthoma</p>	

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