

## boards fodder



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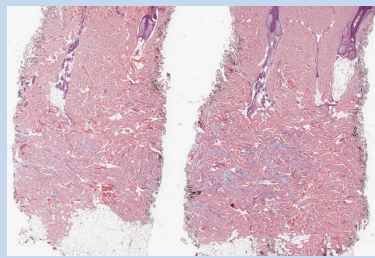
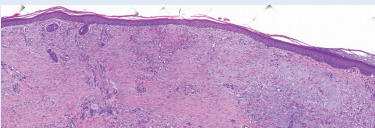
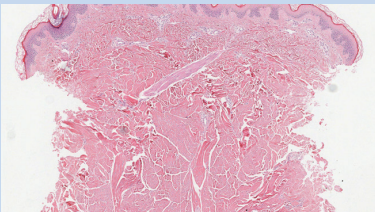
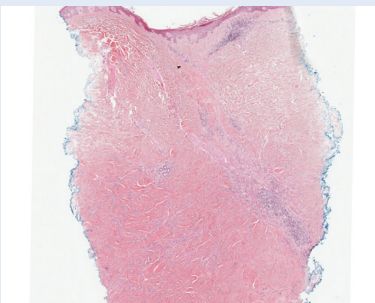
## Square punch differential diagnoses

By Stephanie Saridakis, DO, Melanie Wolf, DO, and Thomas Davis, MD, FAAD

Diagnosis	Histopathologic features	Clinical features and associations	Histology image
Chronic radiation dermatitis	<ul style="list-style-type: none"> <li>Hyperkeratosis common</li> <li>Homogenized dermis without vacuolar change or lymphoid band (vs. LSetA)</li> <li>Prominent dilated ectatic vessels superficially</li> <li><b>Large, stellate "radiation" fibroblasts</b></li> <li>Loss of adnexa</li> <li>Radiation elastosis</li> </ul>	<ul style="list-style-type: none"> <li>Usually limited to the irradiated area</li> <li>Chronic changes occur months to years after initial exposure</li> <li>Clinically, epidermal atrophy/fragility, telangiectasias, hypo- or hyperpigmentation and alopecia are present</li> </ul>	
Necrobiosis lipoidica	<ul style="list-style-type: none"> <li>Diffuse granulomatous inflammation with multinucleated giant cells</li> <li>Acellular pale degenerated collagen between the layers of granulomatous inflammation → "layered cake" appearance</li> <li>Dermal sclerosis (late stage)</li> <li>Increased plasma cells deep in dermis</li> <li>No mucin or eosinophils (vs. GA)</li> <li>+/- cholesterol clefts or lymphoid nodules</li> </ul>	<ul style="list-style-type: none"> <li>Violaceous to pink-brown plaques with palpable peripheral rim and telangiectasias overlying subtle yellow-brown atrophic centers</li> <li>Typically located on anterior shins</li> <li>+/- ulceration</li> <li>Only 0.3% of patients with diabetes have NL</li> </ul>	
Normal back skin	<ul style="list-style-type: none"> <li>Normal thickness of collagen bundles, extending deep within the dermis</li> <li>Broad fascicles of collagen</li> <li>Lacks prominent mucin (vs. scleredema)</li> </ul>		
Scleroderma/morphea	<ul style="list-style-type: none"> <li>Thick hyalinized collagen bundles</li> <li>Loss of adventitial fat → <b>"trapped" eccrine glands</b></li> <li>Sparse lymphoplasmacytic infiltrate at dermal-subcutaneous junction</li> <li>Reduced CD34+ interstitial cells in dermis (vs. increased in NSF)</li> <li>+/- superficial pallor</li> </ul>	<ul style="list-style-type: none"> <li>Group of diseases including limited systemic sclerosis, diffuse systemic sclerosis, and localized cutaneous diseases of morphea or linear scleroderma</li> <li>Localized scleroderma commonly presents as asymmetric sclerotic plaques</li> <li>Active lesions have lilac color border</li> </ul>	

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Scleredema	<ul style="list-style-type: none"> <li>Thick dermis</li> <li>Increased mucin deposition predominantly in the deep dermis with widened spaces between collagen bundles</li> <li>No inflammation or fibrosis</li> </ul>	<ul style="list-style-type: none"> <li>Woody induration of skin, commonly involving the upper back</li> <li>Associations include diabetes mellitus, streptococcal infection, and monoclonal gammopathy</li> </ul>	
Scar	<ul style="list-style-type: none"> <li>Fibroblasts arranged horizontally in an east-west direction</li> <li>Blood vessels arranged vertically in a north-south direction</li> <li>Decreased elastic tissue</li> <li>Effaced epidermis</li> <li>Loss of adnexa</li> </ul>	<ul style="list-style-type: none"> <li>Flesh-colored to pink, hyperpigmented, or hypopigmented, indurated or atrophic plaque at the site of prior trauma</li> </ul>	
Connective tissue nevus	<p>Collagenoma</p> <ul style="list-style-type: none"> <li>Thick, haphazard bundles of collagen with widely spaced elastic fibers</li> </ul> <p>Elastoma</p> <ul style="list-style-type: none"> <li>Normal to somewhat thickened dermis</li> <li>Increased numbers of thick, irregular, fragmented elastic fibers in the mid-to-lower dermis with elastic tissue stains</li> </ul>	<p>Collagenoma</p> <ul style="list-style-type: none"> <li>Skin colored cerebriform plaque</li> <li>Associated with Tuberous Sclerosis (AD, TSC1, or TSC2 mutations, known as shagreen patch) or Proteus Syndrome (somatic, AKT1 mutation)</li> <li>Can be inherited in an autosomal-dominant fashion</li> </ul> <p>Elastoma</p> <ul style="list-style-type: none"> <li>Flesh-colored to yellow papules or plaques</li> <li>Associated with Buschke-Ollendorff Syndrome (AD, LEMD3 mutation)</li> </ul>	
Scleroderroid chronic graft-versus-host disease	<ul style="list-style-type: none"> <li>Subtle basal layer vacuolization</li> <li>Thick, sclerotic dermis with loss of adnexal structures</li> <li>Oftentimes indistinguishable from morphea/scleroderma without history</li> </ul>	<p>Non-sclerotic cGVHD:</p> <ul style="list-style-type: none"> <li>Many morphologies (lichenoid, psoriasiform, poikilodermatous, atopic dermatitis-like, lupus-like, or keratosis pilaris-like eruptions)</li> </ul> <p>Sclerotic cGVHD:</p> <ul style="list-style-type: none"> <li>Lichen sclerosus-like, morphea/scleroderma-like, or eosinophilic fasciitis-like plaques</li> </ul>	

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### Key

AD	Autosomal dominant
cGVHD	Chronic graft-versus-host disease
GA	Granuloma annulare
LSetA	Lichen sclerosus et atrophicus
NL	Necrobiosis lipoidica
NSF	Nephrogenic systemic fibrosis

### References:

1. Elston, D. "Granulomatous and histiocytic." *Dermatopathology*, by Dirk M. Elston et al., 3rd ed., Elsevier, 2019.
2. Elston, D. "Alterations in collagen and elastin." *Dermatopathology*, by Dirk M. Elston et al., 3rd ed., Elsevier, 2019.
3. Elston, D. "Metabolic disorders." *Dermatopathology*, by Dirk M. Elston et al., 3rd ed., Elsevier, 2019.
4. Alikhan A and Hocker TLH. *Review of Dermatology*. Edinburgh: Elsevier; 2017.
5. Bologna J, Jorizzo J, Schaffer I. *Dermatology*. Elsevier; 2017.

Histology slides courtesy of Tom Davis, MD, FAAD