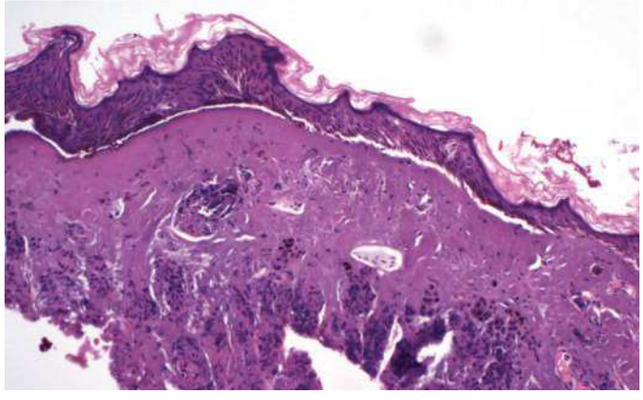
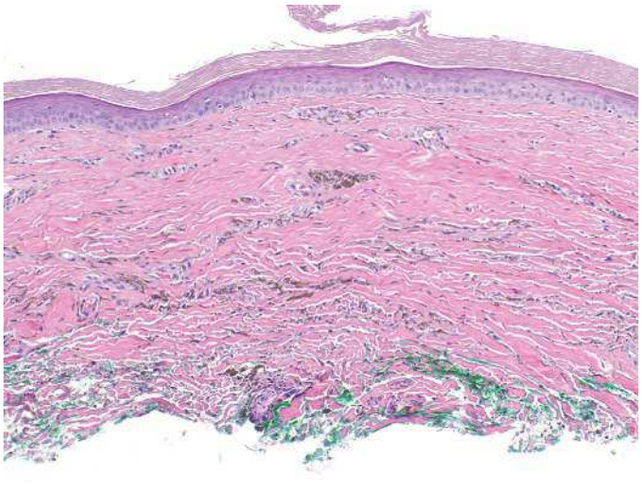
A General Clues Questions

1. This is likely a consequence of:



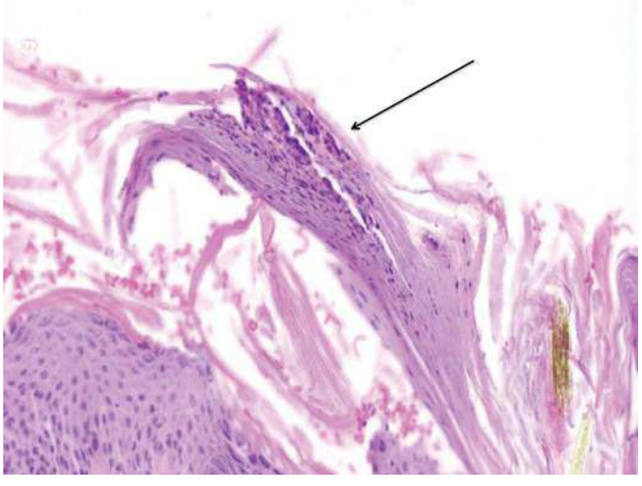
A. Embedding
B. Autolysis
C. Fixation
D. Cautery
E. Grossing

2. The most likely diagnosis is:



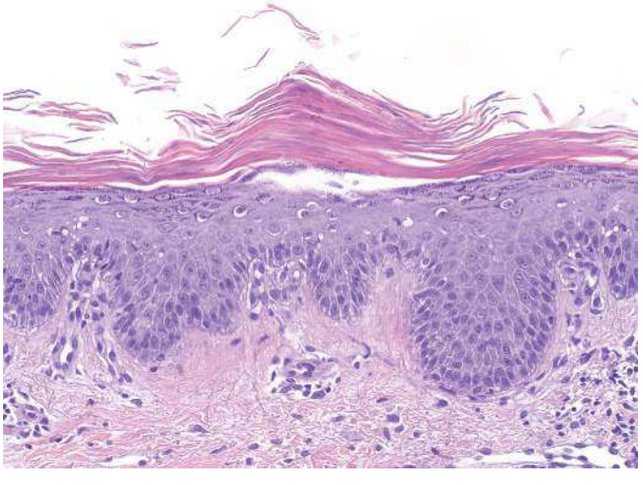
A. Dermatofibroma
B. Cautery artefact
C. Microvenular hemangioma
D. Monsel's tattoo
E. Stasis dermatitis

3. This is typically associated with:



A. Contact dermatitis
B. Lupus erythematosus
C. Seborrheic dermatitis
D. Hartnup disease
E. Stasis dermatitis

4. This is typically associated with:



A. Pityriasis rosea
B. Pityriasis rubra pilaris
C. Pityriasis lichenoides chronica
D. Pityriasis lichenoides et varioliformis acuta
E. Transient acantholytic dermatosis

5. Which of the following is NOT a clue to a deficiency state:
A. Vertically oriented collagen
B. Confluent parakeratosis
C. Superficial epidermal pallor
D. Psoriasiform epidermal hyperplasia
E. Hemorrhage

6. Which of the following is NOT a paraneoplastic dermatosis:
A. Acanthosis nigricans
B. Basex's syndrome
C. Acquired icthyosis
D. Scleromyxedema
E. Scleroderma

7. An absent stratum corneum may be associated with:
A. Reticular erythematous mucinosis
B. Interstitial granulomatous disease
C. Cutaneous T-cell lymphoma
D. Staphylococcal scalded skin syndrome
E. Acrodermatitis enteropathica

8. Intraluminal giant cells may be seen in:
A. Juvenile xanthogranuloma
B. Rosai-Dorfman disease
C. Wells's syndrome
D. Erythema nodosum leprosum
E. Lichen nitidus

9. Which of the following is an INCORRECT association:
A. Tricholemmoma and Brooke-Spiegler syndrome
B. Sebaceous adenoma and Muir-Torre syndrome
C. Cutaneous myxoma and Carney's complex
D. Fibrofolliculoma and Birt-Hogg-Dubé syndrome
E. Leiomyomas and Reed's syndrome

10. Which of the following is NOT a proto-oncogene:
A. RAS
B. MYC
C. ERK
D. RAF
E. MSH2

11. Which of the following is a tumor suppressor:
A. GNAQ
B. NRAS
C. MLH1
D. PTEN
E. BRAF

A General Clues Answers

Table A1 Special stains commonly used in dermatopathology

Stain	Color	Utility
Alcian blue	Bluish green	Identification of nature of mucin pH 2.5 – Sulfated and carboxlyated acid mucopolysaccharides and sialomucins positive pH 5 – Only sulfated mucopolysaccharides positive
Alizarin red	Reddish orange	Identification of calcium
Bodian	Black	Identification of reticulum and nerve fibers
Chloroacetate esterase (Leder's stain)	Pinkish orange	Identification of granulocytes and mast cells *Negative in immature granulocytes and/or significant monocytic expression*
Colloidal iron	Bright blue	Demonstration of carboxylated and sulfated mucopolysaccharides and glycoproteins
Congo red	Red with apple-green birefringence	Identification of amyloid *More yellow than apple-green in localized cutaneous amyloidosis*
Fite	Red (acid-fast bacilli), blue-gray (nuclei)	Better for the identification of *Mycobacterium leprae* as it is much less acid-fast and alcohol-fast than the tubercle bacillus
Fontana-Masson	Black	Identification of melanin *False positive staining with nerves and reticulum fibers*
Giemsa	Purple	Identification of mast cells, leishmania
Gram	Red (Gram-negative), purple (Gram-positive)	Identification of bacteria
Hematoxylin and eosin (H&E)	Pink (cytoplasm), blue/black (nuclei/calcium), red-pink (cytoplasm, collagen, muscle, nerve, fibrin)	Identification of most neoplastic and inflammatory dermatoses *Most commonly used stain in dermatopathology*
Masson-trichrome	Red (muscle, keratin), blue/green (collagen), black (nuclei)	Identification of smooth muscle differentiation, inclusion bodies in digital fibromatosis
Oil Red O	Red	Identification of fat *Requires fresh tissue*
Perls's Prussian blue	Bright blue	Identification of iron-containing decomposition products
Periodic acid-Schiff (PAS)	Deep pink (fungus, fibrin)	Identification of fungi, fibrin
PAS with diastase (PASD)	Pink	Identification of neutral mucopolysaccharides (diastase resistant) Identification of glycogen (diastase labile)
Toluidine blue	Dark blue (nuclei), violet (mast cell granules)	Identification of mast cells
Thioflavine T	Yellow	Identification of amyloid *Fades rapidly with time*

Table A1 Special stains commonly used in dermatopathology (*cont.*)

Stain	Color	Utility
Verhoff-von Gieson (VVG/EVG)	Black	Identification of elastic fibers
Von Kossa	Black	Identification of calcium
Ziehl-Neelsen	Red (acid-fast bacilli)	Identification of mycobacteria

Table A2 Immunohistochemical stains commonly used in dermatopathology

Stain	What it picks up	Uses specific to dermatopathology
Actin (SMA, MSA)	Smooth muscle, myofibroblasts	Myofibroblastic and smooth muscle proliferations Positive in PEComa *Not a definitive marker of smooth muscle differentiation* *SMA is more specific than MSA*
Adipophilin	Mature sebocytes	Identification of sebaceous differentiation in clear cell neoplasms *Can be positive in renal cell carcinoma*
Androgen receptor (AR)	Apocrine and sebaceous glands	Differentiating sclerosing neoplasms (positive in basal cell carcinoma, infiltrating type) Apocrine marker Positive in Paget's disease Supports sebaceous differentiation
Bcl-2	B lymphocytes (mantle zone), T lymphocytes	Cutaneous B-cell lymphoproliferative disease
Bcl-6	Germinal center cells, intrafollicular CD4+ T lymphocytes	Cutaneous B-cell lymphoproliferative disease
BerEp4	Basolateral surface of epithelial cells	Basal cell carcinoma
BRAF	*BRAFV600E* mutation	Does *not* differentiate benign from malignant melanocytic proliferations *Nevi as well as melanomas can be positive*
Caldesmon	Smooth muscle	Smooth muscle neoplasms *Definitive marker of smooth muscle differentiation*
CD1a	Langerhans cells	Langerhans cell histiocytosis (LCH) *Select cases of LCH can be CD1a negative* Negative in cutaneous Rosai-Dorfman disease
CD2	Pan T lymphocyte marker	Cutaneous T-cell lymphoproliferative disease
CD3	Pan T lymphocyte marker	Cutaneous T-cell lymphoproliferative disease
CD4	T helper lymphocytes, monocytes, dendritic cells	Cutaneous T-cell lymphoproliferative disease
CD5	Pan T lymphocyte marker	Cutaneous T-cell lymphoproliferative disease
CD7	Pan T lymphocyte marker	Cutaneous T-cell lymphoproliferative disease
CD8	Cytotoxic/suppressor T lymphocytes	Cutaneous T-cell lymphoproliferative disease
CD10 (CALLA)	Germinal center cells	Cutaneous lymphoproliferative disease Identification of renal primary in cutaneous metastasis Positive in atypical fibroxanthoma (not specific though)
CD15	Neutrophils, Reed-Sternberg cells	Positive in cutaneous Hodgkin disease Positive in histiocytoid Sweet's syndrome
CD19	B lymphocytes	Cutaneous B-cell lymphoproliferative disease
CD20	B lymphocytes	Cutaneous B-cell lymphoproliferative disease
CD21	B lymphocytes	Cutaneous B-cell lymphoproliferative disease
CD22	B lymphocytes	Cutaneous B-cell lymphoproliferative disease

Table A2 Immunohistochemical stains commonly used in dermatopathology (*cont.*)

Stain	What it picks up	Uses specific to dermatopathology
CD23	B lymphocytes, follicular dendritic cells	Cutaneous B-cell lymphoproliferative disease
CD30	Activated T and B lymphocytes	Cutaneous T-cell lymphoproliferative disease, Lyp, ALCL
CD31	Endothelial cells	Vascular neoplasms *Histiocytes can be CD31 positive*
CD34	Progenitor cells	Positive in several non-lineage related entities (*summarized in section on cutaneous mucinoses*)
CD43	Pan T lymphocyte marker	Cutaneous B-cell lymphoproliferative disease
CD45/leukocyte common antigen (LCA)	Leukocytes	Identification of leukocytes in a mixed inflammatory cell infiltrate *Not helpful in differentiating benign from malignant lymphoproliferative disease*
CD45RO	Pan T lymphocyte marker, specifically picks up memory T lymphocytes	Cutaneous T-cell lymphoproliferative disease
CD56	NK cells	Cutaneous B-cell lymphoproliferative disease
CD57	NK cells	Cutaneous lymphoproliferative disease Positive in nerve sheath myxoma^{+}
CD68	Histiocytes, macrophages	Identifying a reactive process
CD79a	B lymphocytes	Cutaneous lymphoproliferative disease
CD117	Mast cells	Mast cell dyscrasia
CD138	Plasma cells	Nodular amyloidosis
CD163	Monocytes/macrophages	Positive in histiocytoid lesions Positive in atypical fibroxanthoma (not specific though)
CD207 (langerin)	Langerhans cells	Langerhans cell histiocytosis (LCH) *More specific in diagnosis of LCH than CD1a*
CDX2	Intestinal epithelial cells	Identification of intestinal primary in cutaneous metastasis
CEA	Tumor marker for adenocarcinoma	Identification of intestinal primary in cutaneous metastasis
CK5/6, high molecular weight cytokeratin	Squamous epithelium	Positive in squamous epithelial-derived malignancies Identification of amyloid in localized cutaneous amyloidosis
CK7, low molecular weight cytokeratin	Non-squamous epithelium, adnexal epithelium, Toker cells	Differentiating MCC from non-cutaneous neuroendocrine carcinoma (negative in MCC) Differentiating atypical intraepidermal pagetoid proliferations (positive in EMPD)
CK15	Follicular bulge stem cells	Differentiation of PCAT from cutaneous metastasis (positive in PCAT) Lost from bulge region in all scarring alopecias
CK20, low molecular weight cytokeratin	Non-squamous epithelium, adnexal epithelium	Differentiating MCC from non-cutaneous neuroendocrine carcinoma (positive in MCC) *Select MCC can be CK20 negative* Differentiating sclerosing neoplasms (positive in desmoplastic trichoepithelioma)
CK903, high molecular weight cytokeratin	Squamous epithelium	Squamous epithelial-derived malignancies Identification of amyloid in localized cutaneous amyloidosis
D2–40	Lymphatic endothelium	Vascular neoplasms Differentiation of PCAT from cutaneous metastasis (positive in PCAT)

Table A2 Immunohistochemical stains commonly used in dermatopathology (*cont.*)

Stain	What it picks up	Uses specific to dermatopathology
Desmin	Smooth muscle	Smooth muscle proliferations *Definitive marker of smooth muscle differentiation*
EMA (CD227, MUC1)	Glandular, ductal epithelia, mature sebocytes, perineural tissue	Helpful in differentiating BCC from a basaloid SCC (negative in former) Highlights sebaceous differentiation Positive in epithelioid sarcoma (vimentin and LMW keratin also positive) Positive in perineurioma
HMB45	Melanocytes	Positive in benign and malignant lesions derived from melanocytes Loss of gradient used by some to differentiate benign from malignant spitzoid proliferations Positive in PEComa
Ki-67	Proliferation index	Increased in malignant proliferations irrespective of lineage
MART-1	Melanocytes	Not useful in identification of actual density of basal melanocytes in sun-damaged skin (overestimates) Low sensitivity in spindled melanocytic neoplasms Positive in PEComa *Macrophages can be positive*
MITF	Melanocytes	Useful in identification of the actual density of basal melanocytes in sun-damaged skin Low sensitivity in spindled melanocytic neoplasms Positive in neurothekeoma* Positive in PEComa *Scars can be positive*
MLH1	Mismatch repair proteins	Lost in sebaceous neoplasms associated with Muir-Torre syndrome
MSH2	Mismatch repair proteins	Lost in sebaceous neoplasms associated with Muir-Torre syndrome
MSH6	Mismatch repair proteins	Lost in sebaceous neoplasms associated with Muir-Torre syndrome
MPO	Myeloid cells	Myeloid leukemia cutis
MUM1/IRF4	Lymphocytes	Cutaneous B-cell lymphoproliferative disease
NKI/C3 (CD63)	Diverse distribution in cell types including lymphoid, myeloid, endothelial cells and melanoma	Positive in neurothekeoma* *Sensitive but not specific for neurothekeoma*
PGP9.5	Neural and neuroendocrine-derived tissue	Positive in neurothekeoma* *Sensitive but entirely non-specific neural/nerve sheath marker*
p40	Squamous epithelium, adnexal basal/myoepithelial cells	Differentiation of PCAT from cutaneous metastasis (positive in PCAT)
p63	Squamous epithelium, adnexal basal/myoepithelial cells	Differentiation of PCAT from cutaneous metastasis (positive in PCAT)
p75NGFR	Neural tissue	Useful in screening spindled melanocytic neoplasms (which can be negative for other routinely used melanocytic markers including S100) *Scars can be positive*
Procollagen	Fibroblasts	Positive in atypical fibroxanthoma (not specific though)
RCC	Renal tissue	Identification of renal primary in cutaneous metastasis Sensitive and specific for primary renal cell *Select cases of renal metastasis can be RCC negative*

Table A2 Immunohistochemical stains commonly used in dermatopathology (*cont.*)

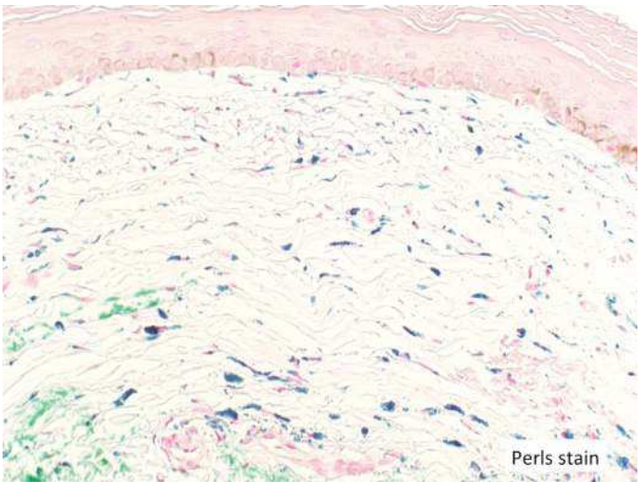
Stain	What it picks up	Uses specific to dermatopathology
S100	Neural crest-derived cells, chondrocytes, adipocytes, myoepithelial cells, macrophages, Langerhans cells, dendritic cells	Positive in melanocytic proliferations Particularly useful in screening spindled melanocytic neoplasms (which can be negative for other routinely used melanocytic markers) Positive in select eccrine neoplasms Positive in granular cell tumors Positive in cutaneous Rosai-Dorfman disease Positive in nerve sheath myxoma^{+} Positive in interdigitating dendritic cell sarcoma *Promiscuous antigen (sensitive but not specific)*
S100A6	Neural crest-derived cells	Positive in nerve sheath myxoma^{+} Positive in neurothekeoma*
SOX10	Melanocytes	Particularly useful in spindled melanocytic neoplasms (which can be negative for other routinely used melanocytic markers including S100) *Scars can be positive*
TdT	Pre-B, pre-T lymphoid cells, and acute lymphoblastic leukemia/lymphoma cells	Cutaneous lymphoproliferative disease
TTF-1	Thyroid, epithelia from upper respiratory tract	Differentiating MCC from non-cutaneous neuroendocrine carcinoma (negative in MCC)
Vimentin	Endothelial cells, fibroblastic reticulum cells, fibroblasts, interdigitating dendritic cells, Langerhans cells, vascular smooth muscle	Positive in mesenchymal proliferations Positive in melanoma *Not a specific marker for anything*

ALCL = Anaplastic large cell lymphoma; CALLA = Common acute lymphoblastic leukemia antigen; EMPD = Extramammary Paget's disease; IRF4 = Interferon regulatory factor 4; Lyp = Lymphomatoid papulosis; MCC = Merkel cell carcinoma; MSA = Muscle specific actin; MUM1 = Multiple myeloma oncogene 1; PCAT = Primary cutaneous adnexal tumors; PEComa = Tumors derived from perivascular epithelioid cells; RCC = Renal cell carcinoma marker; SMA = Smooth muscle actin
* Previously called cellular neurothekeoma; $^{+}$Previously called myxoid neurothekeoma

1. **D.** Image shown is the consequence of a cautery artefact.

   In polypoid lesions, the base of the lesion is typically clinically cauterized to minimize or stop bleeding. This results in unrecognizable cytomorphology and artefactual separation of the epidermis from the dermis.

2. **D.** Image shown is that of a Monsel's tattoo.



   Monsel's solution (ferric subsulfate) is a chemical hemostatic agent that is used to stop and/or prevent bleeding. The use of this agent is associated with deposition of dark brown/black pigment (stains positive for iron with Perls's stain). The presence of admixed multinucleate giant cells is a helpful clue in differentiating this from a nevomelanocytic proliferation.

3. **C.** Shoulder parakeratosis is typically associated with seborrheic dermatitis.

   Other entities that can exhibit shoulder parakeratosis or parakeratotic follicular lipping include:
   - Pityriasis rubra pilaris (follicular lesion)
   - Spongiotic processes or psoriasis involving the face (likely a function of the increased density of follicles in this area)

   Other patterns of parakeratosis useful as a clue to the underlying disease include the following:

   "Mound-like" parakeratosis – Pityriasis rosea, pityriasiform drug reaction
   Parakeratosis with neutrophils but no serum – Psoriasis, psoriasiform drug reaction
   Parakeratosis with neutrophils and serum – Fungal infection
   Parakeratosis in tiers – Porokeratosis, palmoplantar psoriasis

"Capped" parakeratosis – Verruca vulgaris
Horizontally oriented alternating parakeratosis and orthokeratosis – Actinic keratosis, ILVEN
Horizontally and vertically oriented alternating parakeratosis and orthokeratosis – Pityriasis rubra pilaris
Parakeratosis with overlying orthokeratosis – Resolving dermatosis, NOS
"Thick" parakeratosis – Glucagonoma, deficiency states, granular parakeratosis, pityriasis lichenoides

4. **B.** Vertically and horizontally oriented alternating orthokeratosis and parakeratosis is typically seen in pityriasis rubra pilaris.

   Primarily horizontally oriented alternating orthokeratosis and parakeratosis are seen in:
   - ILVEN
   - Actinic keratosis

5. **A.** Vertically oriented collagen bundles in the reticular dermis are associated with digital fibromatosis and acral fibrokeratoma, NOT a deficiency state.

   Clues to deficiency states include:
   - Confluent parakeratosis
   - Superficial epidermal pallor
   - Superficial epidermal necrosis
   - Psoriasiform epidermal hyperplasia with spongiosis
   - Hemorrhage (in pellagra primarily)

6. **E.** Scleroderma is NOT a paraneoplastic dermatosis.

   The most common paraneoplastic dermatoses include:
   - Acanthosis nigricans
   - Acquired icthyosis
   - Basex's syndrome
   - Cutaneous amyloidosis
   - Dermatomyositis
   - Erythema gyratum repens
   - Granuloma annulare
   - Hypertrichosis lanuginose acquisita
   - Leser-Trélat sign
   - Multicentric reticulohistiocytosis
   - Necrobiotic xanthogranuloma
   - Necrolytic migratory erythema
   - Paraneoplastic pemphigus
   - Pyoderma gangrenosum
   - Scleromyxedema
   - Sweet's syndrome
   - Tripe palms

7. **D.** Staphylococcal scalded skin syndrome may be associated with an absent stratum corneum.

   Other entities associated with absence of the stratum corneum include:
   - Pemphigus foliaceus
   - Psoriatic erythroderma
   - Artefactual

8. **B.** Intraluminal giant cells may be seen in cutaneous Rosai-Dorfman disease.

   Other entities associated with intraluminal giant cells include:
   - Melkersson-Rosenthal syndrome
   - Angioendotheliomatosis
   - Recurrent genitocrural infections

9. **A.** Trichilemmomas are a feature of Cowden syndrome NOT Brooke-Spiegler syndrome.

   Cowden syndrome is associated with mutations in *PTEN*, a tumor suppressor gene, that cause the PTEN protein not to work properly leading to hyperactivity of the mTOR pathway. These mutations lead to characteristic features including macrocephaly, intestinal hamartomatous polyps, benign skin tumors (multiple trichilemmomas, papillomatous papules, and acral keratoses) and dysplastic gangliocytoma of the cerebellum (Lhermitte-Duclos disease). In addition, there is a predisposition to breast carcinoma, follicular carcinoma of the thyroid, and endometrial carcinoma.

10. **E.** MSH2 is a mismatch repair protein, NOT a proto-oncogene.

    MSH2 is a protein that in humans is encoded by the *MSH2* gene, which is located on chromosome 2. *MSH2* is a tumor suppressor gene and more specifically a caretaker gene that codes for a DNA mismatch repair (MMR) protein MSH2, which forms a heterodimer with MSH6 to make the human MutSα mismatch repair complex. MSH2 is involved in many different forms of DNA repair, including transcription-coupled repair, homologous recombination, and base excision repair. Mutations in *MSH2* are associated with microsatellite instability.

11. **D.** PTEN is a tumor suppressor.

    Phosphatase and tensin homolog (PTEN) is a protein that, in humans, is encoded by the *PTEN* gene. This gene has been identified as a tumor suppressor that is mutated in a large number of cancers at high frequency. Mutations in the *PTEN* gene are associated with Cowden syndrome. Mutations in the *PTEN* gene cause several other disorders that, like Cowden syndrome, are characterized by the development of non-cancerous tumors called hamartomas. These disorders include Bannayan-Riley-Ruvalcaba syndrome and Proteus-like syndrome. Together, the disorders caused by *PTEN* mutations are called PTEN hamartoma tumor syndromes, or PHTS.

B Genodermatoses and Epidermal Disorders Questions

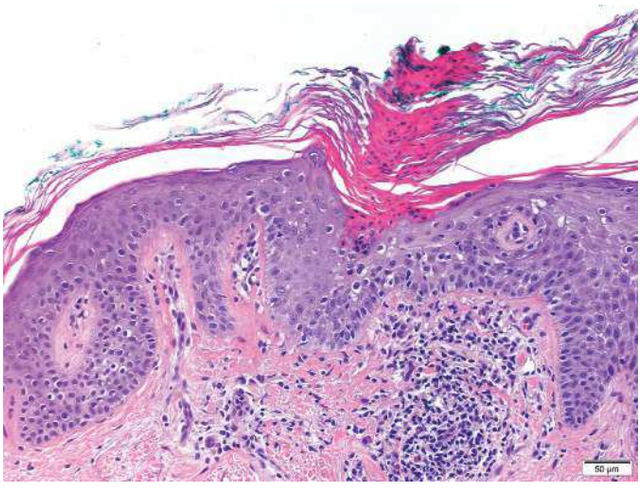
1. Icthyosis vulgaris is characterized by all of the following EXCEPT:
   A. Autosomal dominant mode of inheritance
   B. Hyperkeratosis
   C. Hypergranulosis
   D. Defective synthesis of filaggrin
   E. Sparing of flexural creases

2. X-linked icthyosis is characterized by all of the following EXCEPT:
   A. Dominant mode of inheritance
   B. Hyperkeratosis
   C. Hypergranulosis
   D. Absent steroid sulfatase activity
   E. Involvement of flexural creases

3. Bullous congenital icthyosiform erythroderma is associated with defects in:
   A. Keratins 3 and 12
   B. Keratins 6 and 12
   C. Keratins 8 and 18
   D. Keratins 1 and 10
   E. Keratins 5 and 14

4. The underlying metabolic defect in Refsum's disease is:
   A. Accumulation of lactic acid
   B. Loss of lactic acid
   C. Accumulation of phytanic acid
   D. Loss of phytanic acid
   E. Loss of ascorbic acid

5. Which of the following is correct regarding the image shown:

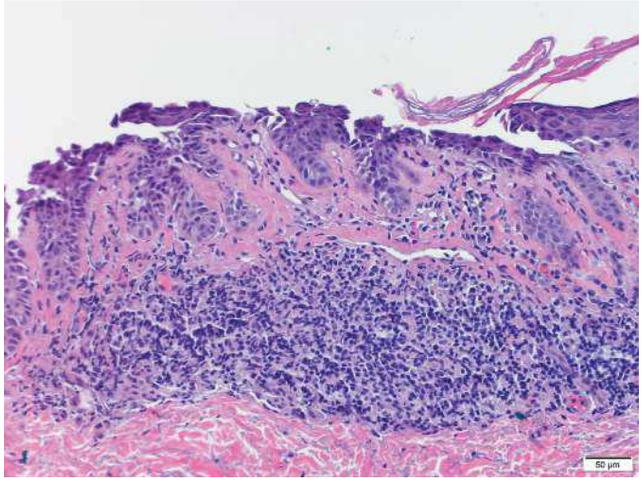


   A. Is a genodermatosis
   B. Is associated with defects in keratins 1 and 10
   C. Has a predilection for intertriginous areas
   D. Is not specific to porokeratosis
   E. The underlying granular cell layer is typically increased

6. Darier's disease has a predilection for:
   A. Sun-exposed areas
   B. Intertriginous areas
   C. Seborrheic areas
   D. Extremities

7. Galli-Galli disease is an acantholytic variant of:
   A. Grover's disease
   B. Goltz-Gorlin syndrome
   C. Darier's disease
   D. Dowling-Degos disease
   E. Brooke-Spiegler syndrome

8. A 48-year-old male presents with sudden-onset, extremely itchy, papulovesicular lesions on the trunk. The best-fit diagnosis for this is:



A. Hailey-Hailey disease
B. Grover's disease
C. Pemphigus vulgaris
D. Bullous pemphigoid
E. Warty dyskeratoma

9. Hailey-Hailey disease is characterized by mutations involving:
A. *ATP2A2* gene
B. Type VII collagen
C. *ATP2C1* gene
D. *LAMA3* gene
E. Keratins 5 and 14

10. The characteristic triad of Netherton's syndrome includes:
A. Icthyosis, vitiligo, trichostasis spinulosa
B. Icthyosis, trichorrhexis invaginata, atopic diathesis
C. Icthyosis, alopecia, bony deformities
D. Icthyosis, palmoplantar hyperkeratosis, acro-osteolysis
E. Icthyosis, peridodontitis, alopecia

11. Focal dermal hypoplasia:
A. Is inherited as an autosomal dominant trait
B. Is associated with adenomatous polyps
C. Is associated with pseudoainhum constricting bands
D. Is caused by mutations in *PORCN*
E. Is associated with an atopic diathesis

12. Flegel's disease:
A. Manifests at birth
B. Presents as hypopigmented macules
C. Is due to faulty keratinization
D. Has a predilection for the trunk
E. Is characterized by cornoid lamellae

13. Granular parakeratosis:
A. Is an inherited abnormality of keratinization
B. Clinically manifests as flaccid blisters
C. Only occurs in the axilla
D. Is the result of defective processing of profilaggrin
E. Is characterized by eosinophilic inclusions within the stratum basalis

14. Histopathology of nevoid hyperkeratosis of the nipple is identical to that of:
A. Granular parakeratosis
B. Kyrle's disease
C. Seborrheic keratosis
D. Warty dyskeratoma
E. Hailey-Hailey disease

15. Acrokeratosis verruciformis:
A. Is X-linked
B. Manifests at birth
C. Manifests clinically as papules on extremities
D. Is associated with Kyrle's disease
E. Is histopathologically characterized by epidermolytic hyperkeratosis

16. The histopathology of Kyrle's disease is best characterized by:
A. A cup-shaped invagination filled with suprabasal clefting
B. A keratin plug overlying an invaginated atrophic epidermis
C. Elongation of rete ridges and acantholytic dyskeratosis
D. A parakeratotic column involving follicular infundibulae
E. Densely compacted, orthokeratosis arising from an epidermal elevation

17. Bullae in epidermolysis bullosa:
A. Are trauma induced
B. Manifest at birth
C. Are associated with antibodies to desmogleins 1 and 3

18. The target antigen in epidermolysis bullosa acquisita is:
A. Dsg1
B. Dsg3
C. BPAg1
D. BPAg2
E. Type VII collagen