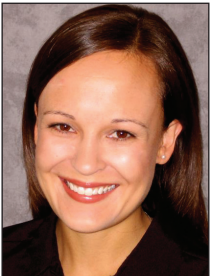


## Diagnosis and associations

Amy Reinstadler, M.D. and Nazanin Saedi, M.D.

Cutaneous finding	Associated disease	Gene	Other findings
Acanthosis nigricans	Diabetes	PPARG	Hypertension, diabetic dermopathy, diabetic ulcers
	HAIR-AN		Hyperandrogenism, insulin resistance, obesity
	PCOS		Irregular menses, infertility, hyperandrogenism, metabolic syndrome
	SLE		Associated with high titers of insulin receptor antibodies
	Paraneoplastic		Gastric CA. Less commonly of the uterus, lung, prostate, breast, or ovary
Basal cell carcinomas	Bazex		Follicular atrophoderma, hypotrichosis, hypohidrosis
	Rombo		Atrophoderma vermiculatum, hypotrichosis, milia, acral cyanosis
	Gorlin	PTCH	Jaw cysts, BCCs, calcification of the falx, ovarian fibromas, medulloblastoma, bifid ribs, palmar pits, frontal bossing, hypertelorism
Café au lait macules	Neurofibromatosis	NF1	Neurofibromas, axillary and inguinal freckling, Lisch nodules, sphenoid dysplasia, optic glioma, juvenile posterior lenticular opacity, meningiomas, pheochromocytomas
	McCune-Albright	GNAS1	Precocious puberty, polyostotic fibrous dysplasia
	Tuberous sclerosis	TSC1, TSC2	Cortical tubers, subependymal nodules, astrocytomas, ash-leaf spots, adenoma sebaceum, forehead plaques, shagreen patches, Koenen's tumors, cardiac rhabdomyomas, renal angiomyolipomas, retinal hamartomas, dental pits, gingival fibromas, confetti macules
	Fanconi anemia	FANCA, B, C, D1, D2, E, F, G, I, J, L, M, and N	Radial ray anomalies, poor growth, genitourinary problems, acute myelogenous leukemia, and 90 percent develop bone marrow failure
	Watson	NF1	Lisch nodules, axillary/inguinal freckling, pulmonary valve stenosis
Clear cell syringoma	Diabetes		Diabetic dermopathy, diabetic ulcers
Cylindroma	Brooke-Spiegler	CYLD	Trichoepitheliomas, spiradenomas, trichoblastomas, BCCs, follicular cysts, organoid nevi
	Familial cylindromatosis	CYLD	Eccrine spiradenomas
	Rasmussen		Milia, trichoepitheliomas
Depigmented patches	Vitiligo		Autoimmune diseases, APECED
	Piebaldism	c-kit	Rare case reports of Hirschsprung, mental retardation, deafness, cerebellar ataxia
	Waardenburg	Type 1: PAX3	Type 1: Dystopia canthorum
		Type 2: MITF, SLUG	Type 2: Deafness
Type 3: PAX3		Type 3: Axial limb defects	
Type 4: SOX10, EDN3		Type 4: Hirschsprung disease	
Dermatofibromas (multiple)	SLE		Photosensitivity, oral ulcers, malar rash, arthritis, serositis, renal, neurologic and heme abnormalities
	HIV		Recurrent VZV, numerous hyperkeratotic warts, treatment-resistant seborrheic dermatitis, oral hairy leukoplakia, chronic HSV, mucocutaneous candidiasis, and CMV, mycobacterial infections, condylomata acuminata, condylomalike molluscum contagiosum
Erythema gyratum repens	Paraneoplastic		Lung or breast CA
Erythema marginatum	Rheumatic fever		Migratory polyarthritis, carditis, Sydenham's chorea, fever, subcutaneous nodules, arthralgia, heart block
Erythema chronicum migrans	Lyme disease		Flu-like symptoms, facial nerve palsy, meningeal symptoms, migrating pain in muscles, joint, and tendons, heart palpitations, polyneuropathy, acrodermatitis chronica atrophicans
Fibrofolliculomas	Birt-Hogg-Dube	FLCN	Trichodiscomas, lipomas, oral fibromas, renal cell CA, medullary thyroid CA, colon CA



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## Diagnosis and associations (continued)

Amy Reinstadler, M.D. and Nazanin Saedi, M.D.

Cutaneous finding	Associated disease	Gene	Other findings
Fissured tongue	Down syndrome	Trisomy 21	Epicanthic skin folds, hypotonia, flat nasal bridge, single palmar fold, short neck, Brushfield spots, mental retardation, AML, ALL, atrioventricular septal defect, hypothyroid, Hirschprung's disease, duodenal atresia, Celiac disease
	Melkersson-Rosenthal		Lip or facial swelling, Bell's palsy
Follicular spicules on the nose	Multiple myeloma		Bone pain, pathologic fractures, weakness, anemia, infection, hypercalcemia, spinal cord compression, or renal failure
Hair collar sign	Encephalocele, meningioma		Ectopic brain tissue
Hidrocytomas	Schopf-Schulz-Passarge		Hypotrichosis, hypodontia, nail abnormalities, multiple palmoplantar eccrine syringofibroadenomas
Hypertrichosis lanuginosa acquisita	Paraneoplastic		Lung or colon CA
Juvenile xanthogranuloma	NF1	NF1	Juvenile myelomonocytic leukemia (JMML)
Keratoacanthomas (eruptive)	Grzybowski		Generalized eruptive form in middle aged adults
	Ferguson Smith		Familial, large ulcerated lesions
	Muir Torre	MSH2, MLH1	Colon cancer, sebaceous neoplasms
	Immunosuppression		
	SLE		Photosensitivity, oral ulcers, malar rash, arthritis, serositis, renal, neurologic and heme abnormalities
Lichen amyloidosis	MEN 2A (Sipple)	RET	Medullary thyroid carcinoma, pheochromocytoma, and hyperparathyroidism
Lip swelling	Melkersson-Rosenthal		Bell's palsy, fissured tongue
	Crohn's disease		Fissures/fistulas, oral Crohn's, metastatic Crohn's, polyarteritis nodosa
	Sarcoid		Erythema nodosum, lupus pernio, granulomatous uveitis, cough, SOB, hilar lymphadenopathy, polyarthralgias, alopecia
	Cheilitis glandularis		Predisposing factor for the development of actinic cheilitis and SCC
	Angioedema		Urticaria, stridor, GI symptoms, eyelid swelling
Necrobiotic xanthogranuloma	Paraproteinaemia		IgGκ
Necrolytic migratory erythema	Glucagonoma		Weight loss, diabetes mellitus, diarrhea, DVTs, and stomatitis
Nevus sebaceous	Schimmelpenning		Deafness, mental retardation, seizures, colobomas, lipodermoids. Trichoblastomas, syringocystadenoma papilliferum may develop within lesions later
Pachydermyperiostosis	Paraneoplastic		Bronchogenic carcinoma
Pigmented macules/lentiginos	Peutz-Jeghers	STK11/LKB1	GI hamartomatous polyps, GI adenocarcinoma, ovarian sex cord tumor, breast, pancreating, and endometrial CA
	Cronkhite-Canada		GI polyposis, nail atrophy, alopecia
	Bannayan-Riley-Ruvalcaba	PTEN	Macrocephaly, hamartomas, lipomas, hemangiomas, mental retardation
	LEOPARD	PTPN11	Café noir spots, ECG abnormalities, pulmonic stenosis, ocular hypertelorism, triangular faces, deafness, broad nasal root, growth retardation, abnormal genitalia
	Carney complex	PRKAR1A	Blue nevi, melanocytic nevi, atrial myoma, psammomatous melanotic schwannomas, testicular tumors, pigmented nodular adrenocortical diseases, pituitary adenoma with acromegaly
Pilonicoma	Rubinstein-Taybi	CREBP	Broad thumbs, beaked nose, downward slanting palpebral fissures, mental retardation
	Gardner	APC	Colonic polyposis, congenital hypertrophy of the retinal epithelium, facial/skull osteomas, extranumerary teeth, desmoids tumors

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*Watch for histiocytosis in the next Boards' Fodder.*

**Diagnosis and associations (continued)***Amy Reinstadler, M.D. and Nazanin Saedi, M.D.*

Cutaneous finding	Associated disease	Gene	Other findings
Pitted teeth	Junctional EB (Herlitz)	Laminin 5	Generalized bullae, perioral granulation tissue, nail dystrophy, anemia, growth retardation, tracheobronchial infections
	Tuberous sclerosis	TSC1, TSC2	Cortical tubers, subependymal nodules, astrocytomas, ash-leaf spots, adenoma sebaceum, forehead plaques, shagreen patches, Koenen's tumors, cardiac rhabdomyomas, renal angiomyolipomas, retinal hamartomas, dental pits, gingival fibromas, confetti macules
	Gorlin	PTCH	Jaw cysts, BCCs, calcification of the falx, ovarian fibromas, medulloblastoma, bifid ribs, palmar pits, frontal bossing, hypertelorism
Pyoderma gangrenosum	Ulcerative colitis		Erythema nodosum, aphthous ulcers, pyostomatitis vegetans
	Paraneoplastic		AML, Multiple myeloma
Sebaceous adenoma/carcinoma	Muir-Torre	MSH2, MLH1	Colon cancer, keratoacanthomas
Seborrheic keratoses (eruptive)	Lesser-Trelat		Proceeds stomach CA, osteogenic sarcoma
Steatocystoma	Jackson-Lawler	K6b, K17	Natal teeth, epidermoid cysts, hair abnormalities
Syringomas	Down syndrome	Trisomy 21	Epicanthic skin folds, hypotonia, flat nasal bridge, single palmar fold, short neck, Brushfield spots, mental retardation, AML, ALL, atrioventricular septal defect, hypothyroid, Hirschprung's disease, duodenal atresia, Celiac disease
	Nicolau-Balus		Milia, atrophoderma vermiculatum
Trichodiscomas	Birt-Hogg-Dube	FLCN	Renal CA, colonic polyps
Trichoepithelioma	Brooke-Spiegler	CYLD	Cylindromas, spiradenomas, trichoblastomas, basal-cell carcinomas, follicular cysts, organoid nevi
	Rasmussen		Milia, cylindromas
Trichilemmoma	Cowden	PTEN	Oral papillomas, sclerotic fibromas, breast fibroadenomas and adenocarcinomas, thyroid adenomas, GI polyps
	Bannayan-Riley-Ruvalcaba	PTEN	Venous/lymph malformations, macrocephaly, penile lentiginos, intestinal polyps, lipoangiomas
Tripe palms	Paraneoplastic		Stomach or lung CA

*Note: Portions of this article have been adapted from the resident rounds section that appeared in the June 2011 edition of The Journal of Drugs in Dermatology (JDD), and are being used with the permission of the JDD.*