Northwestern University

Chicago Dermatological Society

Maintenance of Certification Questions

November 9th, 2016

1. A 40-year-old female presents with 2 mm coalescing papules on her hands, neck, glabella and post-auricular areas. She also complains of dysphagia. Biopsy of a representative lesion shows mucin deposition, increased spindle-like fibroblast proliferation, and fibrosis. Which of the following is not part of the recommended work-up of this condition?

A. Creatine phosphokinase level
B. Esophageal manometry
C. Pulmonary function testing
D. Serum protein immunoelectrophoresis and immunofixation
E. Thyroid function studies

1. **A 40-year-old female presents with 2 mm coalescing papules on her hands, neck, glabella and post-auricular areas. She also complains of dysphagia. Biopsy of a representative lesion shows mucin deposition, increased spindle-like fibroblast proliferation, and fibrosis. Which of the following is not part of the recommended work-up of this condition?**

A. Creatine phosphokinase level
B. Esophageal manometry
C. Pulmonary function testing
D. Serum protein immunoelectrophoresis and immunofixation
E. Thyroid function studies

Discussion

A. Creatine phosphokinase (CPK) level is a recommended serologic test for a patient with a new diagnosis of scleromyxedema to rule-out myopathy, a common systemic manifestation of the disease.

B. Esophageal manometry is recommended in this patient due to her presenting symptom of dysphagia to evaluate for esophageal involvement of scleromyxedema. Functional studies or imaging of a particular organ system in a patient with scleromyxedema should be tailored to the patient's symptomatology.

C. Pulmonary function testing (PFTs) is not necessary in this patient with presumed scleromyxedema. However, if the patient had endorsed dyspnea on presentation, PFTs would be indicated.

D. Serum protein immunoelectrophoresis and immunofixation are necessary to evaluate for a monoclonal gammopathy, one of the diagnostic criteria in scleromyxedema.

E. The question stem refers to a diagnosis of scleromyxedema. Thyroid function studies are necessary to rule out a diagnosis of myxedema of thyroid disease.

References:
Hummer LK. Scleromyxedema. Curr Opin Rheum 2014;26:658-662.
Heymann, WR. Scleromyxedema. J Am Acad Dermatol 2007;57:890-891.

2. A 50-year-old male presents with new waxy, closely spaced, skin-colored, 3 mm papules involving the glabella and pre-auricular areas. Biopsy and laboratory studies are consistent with scleromyxedema. Which of the following is NOT a serological or histopathological feature consistent with a diagnosis of scleromyxedema?

A. Fibrosis and fibroblast proliferation on biopsy
B. IgG paraproteinemia
C. Mucin deposition on biopsy
D. Normal thyroid function testing
E. Presence of Anti-DNA topoisomerase I antibody

2. A 50-year-old male presents with new waxy, closely spaced, skin-colored, 3 mm papules involving the glabella and pre-auricular areas. Biopsy and laboratory studies are consistent with scleromyxedema. Which of the following is NOT a serological or histopathological feature consistent with a diagnosis of scleromyxedema?

A. Fibrosis and fibroblast proliferation on biopsy
B. IgG paraproteinemia
C. Mucin deposition on biopsy
D. Normal thyroid function testing
E. Presence of Anti-DNA topoisomerase I antibody

Discussion

A. Diagnostic histopathological features of scleromyxedema are mucin deposition, fibrosis, and fibroblast proliferation.
B. Monoclonal gammopathy is a criterion for diagnosis of scleromyxedema. The most commonly seen paraproteinemia in scleromyxedema patients is IgG with prevalence of lambda light chains.
C. Diagnostic histopathological features of scleromyxedema are mucin deposition, fibrosis, and fibroblast proliferation.
D. Normal thyroid function testing is a criterion for diagnosis of scleromyxedema as it rules out myxedema associated with thyroid dysfunction.
E. Presence of Anti-DNA topoisomerase I antibody is not found in scleromyxedema patients. It is found in patients with diffuse cutaneous systemic sclerosis and indicates a high risk of interstitial lung disease.

References:
Hummer LK. Scleromyxedema. Curr Opin Rheum 2014;26:658-662.
Heymann, WR. Scleromyxedema. J Am Acad Dermatol 2007;57:890-891.

3. A 3-month-old African American female presents with a 12 cm dark brown uniform plaque on her scalp that has been present since birth. Which statement is correct?

A. On histopathology, the nevomelanocytes do not extend beyond the epidermis and superficial dermis.
B. The most common mutation is a somatic mutation in the heterotrimeric G protein alpha subunit, GNAQ.
C. There is approximately a 5% lifetime risk that this patient may develop melanoma.
D. This lesion can be classified as a medium-sized congenital melanocytic nevus.
E. This lesion is most commonly seen in individuals with Fitzpatrick skin type 1.

3. A 3-month-old African American female presents with a 12 cm dark brown uniform plaque on her scalp that has been present since birth. Which statement is correct?

A. On histopathology, the nevomelanocytes do not extend beyond the epidermis and superficial dermis.
B. The most common mutation is a somatic mutation in the heterotrimeric G protein alpha subunit, GNAQ.
C. There is approximately a 5% lifetime risk that this patient may develop melanoma.
D. This lesion can be classified as a medium-sized congenital melanocytic nevus.
E. This lesion is most commonly seen in individuals with Fitzpatrick skin type 1.

Discussion

A. The most common genetic mutation in large and giant CMN is an activating mutation in the NRAS proto-oncogene (option A is false; GNAQ mutations are more commonly seen in blue nevi and uveal melanoma).
B. One of the most recent classification systems divides congenital melanocytic nevi (CMN) into four categories based on the largest predicted diameter in adulthood. In this classification system, small, medium, large and giant CMN are defined as less than 1.5 cm, 1.5-20 cm, 20-40 cm and > 40 cm in their largest diameter, respectively. A good rule of thumb for estimating the diameter in adulthood consists of multiplying the lesions located on the head by a factor of two, and those located on other anatomic sites by a factor of three (option B is therefore false).
C. Answer C is correct. This patient has a large congenital melanocytic nevus. Current evidence suggests that the lifetime risk of cutaneous or extracutaneous melanoma developing in association with a large or giant CMN is approximately 5%.
D. On histopathology, nevomelanocytes in CMN tend to extend deeper into the dermis and subcutaneous tissues (option D is false).
E. These lesions are more common in darker skin types (option E is false).

References:

Price HN, Schaffer JV. Congenital melanocytic nevi—when to worry and how to treat: Facts and controversies. Clinics in Dermatology. 2010. 28(3): 293-302.

Van Raamsdonk C, Bezrookove V, Green G, et al. Frequent somatic mutations of *GNAQ* in uveal melanoma and blue nevi. Nature. 2009. 457(7229): 599–602.

Charbel C, Fontaine RH, Malouf GG, et al. NRAS mutation is the sole recurrent somatic mutation in large congenital melanocytic nevi. J Invest Dermatol. 2014. 134(4):1067-74.

Krengel S, Scope A, Dusza SW, Vonthein R, Marghoob AA. New recommendations for the categorization of cutaneous features of congenital melanocytic nevi. J Am Acad Dermatol. 2013 Mar;68(3):441-51.

4. A 3-year-old African American male with a history of developmental delay, seizures and hydrocephalus s/p shunt placement presented to the office because his parents were concerned about a large, dark brown "birthmark" on his back. Which statement is correct regarding his condition?

A. Neurological symptoms in symptomatic individuals commonly develop before 6 months of age.
B. On physical exam, most patients with this condition are likely to have numerous proliferative nodules within a congenital melanocytic nevus.
C. On physical exam, most patients with this condition are likely to have a giant congenital melanocytic nevus in a posterior axial location.
D. The preferred modality for diagnosis of this condition is a PET-CT scan.
E. There is a very strong correlation between evidence of this condition on imaging and neurological symptoms.

4. A 3-year-old African American male with a history of developmental delay, seizures and hydrocephalus s/p shunt placement presented to the office because his parents were concerned about a large, dark brown "birthmark" on his back. Which statement is correct regarding his condition?

A. Neurological symptoms in symptomatic individuals commonly develop before 6 months of age.
B. On physical exam, most patients with this condition are likely to have numerous proliferative nodules within a congenital melanocytic nevus.
C. On physical exam, most patients with this condition are likely to have a giant congenital melanocytic nevus in a posterior axial location.
D. The preferred modality for diagnosis of this condition is a PET-CT scan.
E. There is a very strong correlation between evidence of this condition on imaging and neurological symptoms.

Discussion

A. While proliferative nodules are seen within CMN, they are not associated with NCM (option A is false).
B. The preferred imaging modality is an MRI with gadolinium contrast (option 2 is false).
C. The patient in this case is suffering from neurocutaneous melanosis (NCM), a rare complication associated most commonly with large congenital melanocytic nevi (CMN). Those at highest risk have CMN larger than 40 cm in their final size in a posterior axial location, multiple satellite nevi and/or numerous medium-sized CMN (option C is correct).
D. Clinical manifestations are usually seen at a median age of two years (option D is false).
E. Limited evidence suggests that only approximately 1-10% of patients with evidence of NCM on imaging develop neurological symptoms (option E is false).

References:

Di Rocco F, Sabatino G, Koutzoglou M. Neurocutaneous melanosis. Childs Nerv Syst. 2004. 20(1):23.

Lovett A, Maari C, Decarie JC, et al. Large congenital melanocytic nevi and neurocutaneous melanocytosis: one pediatric center's experience. J Am Acad Dermatol. 2009;61(5):766.

DeDavid M, Orlow SJ, Provost N, et al. Neurocutaneous melanosis: clinical features of large congenital melanocytic nevi in patients with manifest central nervous system melanosis. J Am Acad Dermatol. 1996;35(4):529.

Marghoob AA, Dusza S, Oliveria S, Halpern AC. Number of satellite nevi as a correlate for neurocutaneous melanocytosis in patients with large congenital melanocytic nevi. Arch Dermatol. 2004;140(2):171.

Schaffer JV, McNiff JM, Bolognia JL. Cerebral mass due to neurocutaneous melanosis: eight years later. Pediatr Dermatol. 2001;18(5):369

Foster RD, Williams ML, Barkovich AJ, Hoffman WY, Mathes SJ, Frieden IJ. Giant congenital melanocytic nevi: the significance of neurocutaneous melanosis in neurologically asymptomatic children. Plast Reconstr Surg. 2001;107(4):933.

5. A 60-year-old male with HIV/AIDS is re-admitted to the hospital for altered mental status. He was discharged three weeks previously for diverticulitis, which was treated with intravenous antibiotics and supportive care. Four months prior, he spent one month in Southern Africa on safari; while there, he encountered cows, goats, and sheep. His cutaneous examination was notable for several scattered verrucous and ulceronecrotic plaques. PCR performed on tissue biopsy revealed *Acanthamoeba* spp., and the patient was diagnosed with disseminated acanthamoebiasis complicated by granulomatous amoebic encephalitis. Which of the following most likely predisposed this patient to developing this infection?

A. Exposure to livestock
B. Immunosuppressed status
C. Recent antibiotic exposure
D. Recent hospitalization
E. Travel to Africa

5. A 60-year-old male with HIV/AIDS is re-admitted to the hospital for altered mental status. He was discharged three weeks previously for diverticulitis, which was treated with intravenous antibiotics and supportive care. Four months prior, he spent one month in Southern Africa on safari; while there, he encountered cows, goats, and sheep. His cutaneous examination was notable for several scattered verrucous and ulceronecrotic plaques. PCR performed on tissue biopsy revealed *Acanthamoeba* spp., and the patient was diagnosed with disseminated acanthamoebiasis complicated by granulomatous amoebic encephalitis. Which of the following most likely predisposed this patient to developing this infection?

A. Exposure to livestock
B. Immunosuppressed status
C. Recent antibiotic exposure
D. Recent hospitalization
E. Travel to Africa

Discussion

B. *Acanthamoeba* spp. is a free-living amoeba that is found worldwide and is ubiquitous in water and soil. Similar to other opportunistic infections, *Acanthamoeba* spp. requires an immunosupressed host in order to cause disseminated acanthamoebiasis and granulomatous amoebic encephalitis. The amoebic trophozoites establish infection after gaining access to the bloodstream via direct inoculation into skin or via inhalation.

A, C, D, E: Though the patient's recent medical and social history may be relevant to other infections that could be included in the initial differential diagnosis, these factors would not alone predispose an individual to developing disseminated acanthamoebiasis or granulomatous amoebic encephalitis.

References:
Aichelburg AC, Walochnik J, Assadian O, et al. Successful treatment of disseminated Acanthamoeba sp. infection with miltefosine. Emerging Infectious Diseases 2008;14:1743-6.
Galarza C, Ramos W, Gutierrez EL, et al. Cutaneous acanthamebiasis infection in immunocompetent and immunocompromised patients. International Journal of Dermatology 2009;48:1324-9.
Qvarnstrom Y, Visvesvara GS, Sriram R, da Silva AJ. Multiplex real-time PCR assay for simultaneous detection of Acanthamoeba spp., Balamuthia mandrillaris, and Naegleria fowleri. Journal of Clinical Microbiology 2006;44:3589-95.
Trabelsi H, Dendana F, Sellami A, et al. Pathogenic free-living amoebae: epidemiology and clinical review. Pathologie-biologie 2012;60:399-405.

6. A 2-day-old female was born with diffuse 2-5mm firm dome-shaped blue-red papules of the scalp, chest, abdomen, and extremities. The infant was also small for gestational age, and physical exam was notable for deafness and hepatosplenomegaly. CT shows periventricular calcifications. The skin lesions are observed to fade into light brown macules over the next several days. If one of the skin lesions were biopsied, what would the histology most likely show?

A. CD1a and S100 positive staining cells
B. Clonal proliferation of immature cells of neural crest origin
C. Dilated vessels in the dermis with thrombosis and endothelium hyperplasia
D. Hematopoietic cells in the dermis
E. Nuclear and cytoplasmic amphophilic inclusions with chromatin at the nuclear perimeter

6. A 2-day-old female was born with diffuse 2-5mm firm dome-shaped blue-red papules of the scalp, chest, abdomen, and extremities. The infant was also small for gestational age, and physical exam was notable for deafness and hepatosplenomegaly. CT shows periventricular calcifications. The skin lesions are observed to fade into light brown macules over the next several days. If one of the skin lesions were biopsied, what would the histology most likely show?

A. CD1a and S100 positive staining cells
B. Clonal proliferation of immature cells of neural crest origin
C. Dilated vessels in the dermis with thrombosis and endothelium hyperplasia
D. Hematopoietic cells in the dermis
E. Nuclear and cytoplasmic amphophilic inclusions with chromatin at the nuclear perimeter

Discussion

A. Immunostaining for CD1a and S100 is considered diagnostic in Langerhans cell histiocytosis.

B. This answer choice describes cutaneous neuroblastoma which is diagnosed on biopsy and with elevated urine VMA (vanillylmandelic acid) and HVA (homovanillic acid).

C. This answer choice describes the findings seen with multifocal lymphoangioendotheliomatosis, which is not associated with intrauterine growth restriction, periventricular calcifications and sensorineural hearing loss.

D. This is the correct answer. Dermal extramedullary hematopoiesis is normal during gestation but is persistent in various pathologic states that occur *in utero*. Postnatal extramedullary hematopoiesis is associated with congenital toxoplasmosis, rubella, and CMV, the entity described in this question stem.

E. The question stem describes a "blueberry muffin baby" caused by congenital CMV infection. Although the classic CMV inclusions do show amphophilic staining and stain positively for CCH2/AD169, the cutaneous lesions of congenital CMV are due to extramedullary hematopoiesis and are not due to direct viral cytopathic change.

References:
Paller AS, Mancini AJ. Hurwitz Clinical Pediatric Dermatology: A Textbook of Skin Disorders of Childhood and Adolescence (4th Ed.). Philadelphia: Elsevier Saunders; 2011.

7. A 52-year-old female with a history of fasting hyperglycemia and an unprovoked pulmonary embolism presents for evaluation of a one-year history of a waxing and waning cutaneous eruption, unresponsive to treatment with topical steroids, vitamin D analogues, and systemic methotrexate. On physical exam, she is noted to have symmetric erythematous, eroded and crusted plaques in the perineum, vulva and inguinal creases. Skin biopsy reveals epidermal pallor, spongiosis, necrotic keratinoctyes, and a perivascular infiltrate of lymphocytes. Which of the following is the next best step in management?

A. Check ELISA for IgG antibodies to desmoglein 1 and desmoglein 3
B. Check HIV serologies
C. Perform a CT scan of the abdomen and pelvis
D. Perform MRI of the brain to evaluate for metastatic disease
E. Stop methotrexate and start systemic cyclosporine

7. A 52-year-old female with a history of fasting hyperglycemia and an unprovoked pulmonary embolism presents for evaluation of a one-year history of a waxing and waning cutaneous eruption, unresponsive to treatment with topical steroids, vitamin D analogues, and systemic methotrexate. On physical exam, she is noted to have symmetric erythematous, eroded and crusted plaques in the perineum, vulva and inguinal creases. Skin biopsy reveals epidermal pallor, spongiosis, necrotic keratinoctyes, and a perivascular infiltrate of lymphocytes. Which of the following is the next best step in management?

A. Check ELISA for IgG antibodies to desmoglein 1 and desmoglein 3
B. Check HIV serologies
C. Perform a CT scan of the abdomen and pelvis
D. Perform MRI of the brain to evaluate for metastatic disease
E. Stop methotrexate and start systemic cyclosporine

Discussion

A. Necrolytic migratory erythema (NME) may present similarly to pemphigus vulgaris with eroded patches and plaques and mucous membrane involvement. NME is not an autoimmune bullous disorder and does not have an association with autoantibodies to desmogleins. For NME, relevant labs include complete blood count, serum glucose, glucagon, zinc and fatty acid levels.
B. NME may be mistaken for refractory seborrheic dermatitis. Seborrheic dermatitis can be seen with increased frequency and severity in association with HIV.
C. CT scan of the abdomen and pelvis in order to evaluate for a pancreatic tumor causing glucagonoma syndrome is the appropriate next step once the diagnosis of NME is made.
D. Approximately 70% of glucagonomas are already metastatic at the time of diagnosis, most commonly to the liver. Metastases to the brain are rare and thus MRI of the brain is not the next best step in evaluation.
E. Though NME often mimics atopic dermatitis clinically, the biopsy findings of epidermal pallor and necrotic keratinocytes do not support the diagnosis of atopic dermatitis, and thus treatment with cyclosporine would be inappropriate.

References:
Wu S, Bai J, Xu J, Ma Q, Wu Z. Necrolytic migratory erythema as the first manifestation of pancreatic neuroendocrine tumor. World J Surg Onc 2014;12(1):220.
John A, Schwartz R. Glucagonoma syndrome: a review and update on treatment. Journal of the European Academy of Dermatology and Venereology 2016
Öberg K, Eriksson B. Endocrine tumours of the pancreas. Best Practice & Research Clinical Gastroenterology 2005;19(5):753-781.

8. Which of the following types of sarcoidosis is associated with a worse prognosis?

A. Erythrodermic
B. Ichthyosiform
C. Lupus pernio
D. Morpheaform
E. Subcutaneous

8. Which of the following types of sarcoidosis is associated with a worse prognosis?

A. Erythrodermic
B. Ichthyosiform
C. Lupus pernio
D. Morpheaform
E. Subcutaneous

Discussion

A, B, D. In general, most cutaneous manifestations of sarcoidosis do not correlate with the extent or nature of systemic involvement or prognosis.

C. Lupus pernio confers a poor prognosis. It is associated with longstanding sarcoidosis with chronic fibrotic disease, pulmonary fibrosis, chronic uveitis, and bone cysts.

E. Subcutaneous sarcoidosis is commonly associated with systemic involvement, but the overall prognosis is good in terms of response to therapy for this variant.

References:
Mana J, Marcoval J, Rubio M, Labori M, Fanlo M, Pujol R. Granulomatous cutaneous sarcoidosis: diagnosis, relationship to systemic disease, prognosis and treatment. Sarcoidosis Vasc Diffuse Lung Dis 2013;30:268-81.
Marcoval J, Mana J, Moreno A, Peyri J. Subcutaneous sarcoidosis--clinicopathological study of 10 cases. Br J Dermatol 2005;153:790-4.
Mana J, Salazar A, Manresa F. Clinical factors predicting persistence of activity in sarcoidosis: a multivariate analysis of 193 cases. Respiration 1994;61:219-25.
Neville E, Walker AN, James DG. Prognostic factors predicting the outcome of sarcoidosis: an analysis of 818 patients. Q J Med 1983;52:525-33.

9. Which of the following histological findings are NOT seen in sarcoidosis:

A. Epithelioid histiocytes forming “naked tubercles” with minimal lymphocytic infiltrate
B. Giant cells containing eosinophilic stellate inclusions representing engulfed collagen
C. Granulomas in the subcutaneous fat
D. Palisading histiocytes surrounding a central focus of degenerated connective tissue
E. Rounded laminated basophilic inclusions representing degenerating lysosomes

9. Which of the following histological findings are NOT seen in sarcoidosis:

A. Epithelioid histiocytes forming “naked tubercles” with minimal lymphocytic infiltrate
B. Giant cells containing eosinophilic stellate inclusions representing engulfed collagen
C. Granulomas in the subcutaneous fat
D. Palisading histiocytes surrounding a central focus of degenerated connective tissue
E. Rounded laminated basophilic inclusions representing degenerating lysosomes

Discussion

A. The granulomas seen in sarcoidosis are “naked” tubercles with relatively few lymphocytes around the tubercles.

B. and E. Asteroid bodies are eosinophilic stellate inclusions, and Schaumann bodies are basophilic cytoplasmic inclusions. Both can be found in sarcoidosis but are not specific and have been observed in other granulomatous conditions such as tuberculosis, leprosy, and berylliosis.

C. Granulomas in the subcutaneous fat are suggestive of the subcutaneous variant (Darier-Roussy) of sarcoidosis.

D. Palisading granulomas surround a central focus of degenerated connective tissue, mucin accumulation, or fibrin. Examples of conditions with palisading granulomas include granuloma annulare, necrobiosis lipoidica, and rheumatoid nodule. The granulomas seen in sarcoidosis are “naked” tubercles with relatively few lymphocytes around the tubercles.

References:
Newman LS, Rose CS, Maier LA. Sarcoidosis. N Engl J Med 1997;336:1224-34.
Rapini, R. Practical Dermatopathology. 2nd ed. Edinburgh, England: Elsevier/Saunders, 2012.

10. A 1-year-old girl is brought for evaluation of a red to brown papule on the back that has gradually increased in size to a plaque. A biopsy of the lesion would later show an increased number of mast cells. What clinical exam finding should be elicited?

A. Applying inward pressure from the border of the lesion induces a dimple formation
B. Applying pressure at lesion center causes invagination, which is restored upon pressure release
C. Applying tangential pressure at the edge of the lesion causes skin peeling
D. Rubbing of the lesion causes redness and edema of the lesion
E. Stroking of normal skin causes redness and edema of normal skin

10. A 1-year-old girl is brought for evaluation of a red to brown papule on the back that has gradually increased in size to a plaque. A biopsy of the lesion would later show an increased number of mast cells. What clinical exam finding should be elicited?

A. Applying inward pressure from the border of the lesion induces a dimple formation
B. Applying pressure at lesion center causes invagination, which is restored upon pressure release
C. Applying tangential pressure at the edge of the lesion causes skin peeling
D. Rubbing of the lesion causes redness and edema of the lesion
E. Stroking of normal skin causes redness and edema of normal skin

Discussion

A. This describes the dimple sign, which is positive in dermatofibromas.
B. This describes the buttonhole sign, which is positive in neurofibromas and anetoderma.
C. This describes the Nikolsky sign, which is positive in intraepidermal blistering disorders like pemphigus vulgaris.
D. This describes the Darier sign, which is positive in almost all childhood-onset and most adult-onset mastocytosis.
E. This describes dermatographism, in which physical urticaria is induced in otherwise normal skin.

References:
Hartmann K, Escribano L, Grattan C, Brockow K, Carter MC, Alvarez-Twose I, et al. Cutaneous manifestations in patients with mastocytosis: Consensus report of the European Competence Network on Mastocytosis; the American Academy of Allergy, Asthma & Immunology; and the European Academy of Allergology and Clinical Immunology. J Allergy Clin Immunol. 2016;137(1):35-45.
Paller AS, Mancini AJ. Hurwitz Clinical Pediatric Dermatology: A Textbook of Skin Disorders of Childhood and Adolescence (5th Ed.). Philadelphia: Elsevier; 2016.

11. A 1-month-old boy is brought for evaluation of numerous scattered red to brown macules, papules, and plaques. A few of the raised lesions have a *peau d'orange* appearance and Darier sign is positive. Which of the following is correct regarding this condition?

A. It will most likely persist beyond puberty
B. Histopathology will reveal increased numbers of mast cells
C. This patient has a germline mutation in the *KIT* gene
D. The patient is at high risk for anaphylaxis
E. A bone marrow biopsy should be ordered

11. A 1-month-old boy is brought for evaluation of numerous scattered red to brown macules, papules, and plaques. A few of the raised lesions have a *peau d'orange* appearance and Darier sign is positive. Which of the following is correct regarding this condition?

A. A bone marrow biopsy should be ordered
B. Histopathology will reveal increased numbers of mast cells
C. It will most likely persist beyond puberty
D. This patient has a germline mutation in the *KIT* gene
E. This patient is at high risk for anaphylaxis

Discussion

A. The vast majority of mastocytosis cases in children are cutaneous and not systemic; therefore a bone marrow biopsy is not normally warranted. Choice E is incorrect.
B. This child has clinical signs of cutaneous mastocytosis. A lesional skin biopsy would show increased numbers of mast cells, most easily seen with a tryptase antibody stain.
C. Cutaneous mastocytosis in children most commonly spontaneously resolves around puberty. Choice A is incorrect.
D. While most children and adults with mastocytosis have an activating mutation in the *KIT* gene, about 25% of children with mastocytosis have no detectable *KIT* gene mutations. Choice C is incorrect as the mutation is not germline.
E. Childhood-onset mastocytosis has a low risk of anaphylaxis (<10%) compared to adult-onset (50%). Choice D is correct.

References:
Hartmann K, Escribano L, Grattan C, Brockow K, Carter MC, Alvarez-Twose I, et al. Cutaneous manifestations in patients with mastocytosis: Consensus report of the European Competence Network on Mastocytosis; the American Academy of Allergy, Asthma & Immunology; and the European Academy of Allergology and Clinical Immunology. J Allergy Clin Immunol. 2016;137(1):35-45.
Paller AS, Mancini AJ. Hurwitz Clinical Pediatric Dermatology: A Textbook of Skin Disorders of Childhood and Adolescence (5th Ed.). Philadelphia: Elsevier; 2016.