

# Chapter 80

## Acne Vulgaris and Acneiform Eruptions

Andrea L. Zaenglein, Emmy M. Graber, & Diane M. Thiboutot

### REFERENCES

1. Williams C, Layton AM: Persistent acne in women : Implications for the patient and for therapy. *Am J Clin Dermatol* **7**(5):281-290, 2006
2. Ghodsi SZ et al: Prevalence, severity, and severity risk factors of acne in high school pupils: A community-based study. *J Invest Dermatol* **129**(9):2136-2141, 2009
3. Bataille V et al: The influence of genetics and environmental factors in the pathogenesis of acne: A twin study of acne in women. *J Invest Dermatol* **119**:1317-1322, 2002
4. Wilkins JWJ, Voorhees JJ: Prevalence of nodulocystic acne in white and Negro males. *Arch Dermatol* **102**:631, 1970
5. Voorhees JJ: Nodulocystic acne as a phenotypic feature of the XYY genotype. *Arch Dermatol* **105**:913, 1972
6. Thiboutot D et al: Activity of type 1 5 $\alpha$ -reductase is greater in the follicular infundibulum compared with the epidermis. *Br J Dermatol* **136**:166-171, 1997
7. Thiboutot D et al: Activity of 5- $\alpha$ -reductase and 17- $\beta$ -hydroxysteroid dehydrogenase in the infundibulum of subjects with and without acne vulgaris. *Dermatology* **196**:38-42, 1998
8. Imperato-McGinley J et al: The androgen control of sebum production. studies of subjects with dihydrotestosterone deficiency and complete androgen insensitivity. *J Clin Endocrinol Metabol* **76**:524-528, 1993
9. Downing DT et al: Essential fatty acids and acne. *J Am Acad Dermatol* **14**:221-225, 1986
10. Guy R, Green M, Kealey T: Modeling of acne in vitro. *J Invest Dermatol* **106**:176-182, 1996
11. Sanders DA et al: The isolation and maintenance of the human pilosebaceous unit. *Br J Dermatol* **131**:166-176, 1994
12. Munro CS, Wilkie AO: Epidermal mosaicism producing localised acne: Somatic mutation in FGFR2. *Lancet* **352**:704-705, 1998
13. Melnik B, Schmitz G: FGFR2 signaling and the pathogenesis of acne. *J Dtsch Dermatol Ges* **6**(9):721-728, 2008
14. Thiboutot D et al: Activity of the type 1 5 $\alpha$ -reductase exhibits regional differences in isolated sebaceous glands and whole skin. *J Invest Dermatol* **105**(2):209-214, 1995
15. Harris HH: Sustainable rates of sebum secretion in acne patients and matched normal control subjects. *J Am Acad Dermatol* **8**:200, 1983
16. Kligman AM, Wheatley VR, Mills OH: Comedogenicity of human sebum. *Arch Dermatol* **102**:267-275, 1970
17. Ottaviani M et al: Peroxidated squalene induces the production of inflammatory mediators in HaCaT keratinocytes: A possible role in acne vulgaris. *J Invest Dermatol* **126**(11):2430-2437, 2006
18. Trivedi NR et al: Peroxisome proliferator-activated receptors increase human sebum production. *J Invest Dermatol* **126**(9):2002-2009, 2006
19. Pochi PE, Strauss JS: Sebaceous gland response in man to the administration of testosterone, D4-androstenedione, and dehydroisoandrosterone. *J Invest Dermatol* **52**:32-36, 1969
20. Thiboutot D et al: Androgen metabolism in sebaceous glands from subjects with and without acne [see comments]. *Arch Dermatol* **135**(9):1041-1045, 1999
21. Lucky AW et al: Predictors of severity of acne vulgaris in young adolescent girls: Results of a five-year longitudinal study [see comments]. *J Pediatr* **130**(1):30-39, 1997
22. Strauss J, Kligman A: Effect of cyclic progestin-estrogen therapy on sebum and acne in women. *JAMA* **190**:815, 1964
23. Thiboutot D: Regulation of human sebaceous glands. *J Invest Dermatol* **123**(1):1-12, 2004
24. Ganceviciene R et al: Involvement of the corticotropin-releasing hormone system in the pathogenesis of acne vulgaris. *Br J Dermatol* **160**(2):345-352, 2009
25. Norris JFB, Cunliffe WJ: A histological and immunocytochemical study of early acne lesions. *Br J Dermatol* **118**:651-659, 1988

26. Jeremy A et al: Inflammatory events are involved in acne lesion initiation. *J Invest Dermatol* **121**:20-27, 2003
27. Leyden JJ: Propionibacterium levels in patients with and without acne vulgaris. *J Invest Dermatol* **65**:382, 1975
28. Nagy I et al: Propionibacterium acnes and lipopolysaccharide induce the expression of antimicrobial peptides and proinflammatory cytokines/chemokines in human sebocytes. *Microbes Infect* **8**(8):2195-2205, 2006
29. Webster G, Indrisano J, Leyden JJ: Antibody titers to Propionobacterium acnes cell wall carbohydrate in nodulocystic acne patients. *J Invest Dermatol* **84**:496-500, 1985
30. Webster GF: Complement activation in acne vulgaris. Consumption of complement by comedones. *Infect Immun* **26**:183, 1979
31. Puhvel SM, Hoffman IK, Reisner RM: Delayed hypersensitivity of patients with acne vulgaris to Corynebacterium acnes. *J Invest Dermatol* **49**:154-158, 1967
32. Webster G et al: Susceptibility of Propionobacterium acnes to killing and degradation by human neutrophils and monocytes in vitro. *Infect Immun* **49**:116-121, 1985
33. Abdel Fattah NSA et al: Tissue and blood superoxide dismutase activities and malondialdehyde levels in different clinical severities of acne vulgaris. *Br J Dermatol* **159**(5):1086-1091, 2008
34. Vowels B, Yang S, Leyden J: Induction of proinflammatory cytokines by a soluble factor of Propionibacterium acnes: Implications for chronic inflammatory acne. *Infect Immun* **63**:3158-3165, 1995
35. Kim J et al: Activation of toll-like receptor 2 in acne triggers inflammatory cytokine responses. *J Immunol* **169**:1535-1541, 2002
36. Lee JK, Duong B, Ochoa M, Legaspi A, Modlin RL, Kim J: Propionobacterium acnes induction of proinflammatory cytokines in polymorphonuclear cells occurs through toll-like receptor 2: The role of innate immune response in acne vulgaris. *J Invest Dermatol* **119**:326, 2002
37. Lee D-Y et al: Histone H4 is a major component of the antimicrobial action of human sebocytes. *J Invest Dermatol* **129**(10):2489-2496, 2009
38. Lee D-Y et al: Sebocytes express functional cathelicidin antimicrobial peptides and can act to kill propionibacterium acnes. *J Invest Dermatol* **128**(7):1863-1866, 2008
39. Liu PT et al: CD209(+) macrophages mediate host defense against Propionibacterium acnes. *J Immunol* **180**(7):4919-4923, 2008
40. Hoyt G, Hickey MS, Cordain L: Dissociation of the glycaemic and insulinaemic responses to whole and skimmed milk. *Br J Nutr* **93**(2):175-177, 2005
41. Smith RN et al: The effect of a high-protein, low glycemic-load diet versus a conventional, high glycemic-load diet on biochemical parameters associated with acne vulgaris: A randomized, investigator-masked, controlled trial. *J Am Acad Dermatol* **57**(2):247-256, 2007
42. Jacob CI, Dover JS, Kaminer MS: Acne scarring: A classification system and review of treatment options. *J Am Acad Dermatol* **45**(1):109-117, 2001
43. Lucky AW et al: Acne vulgaris in premenarchal girls. An early sign of puberty associated with rising levels of dehydroepiandrosterone. *Arch Dermatol* **130**:308-314, 1994
44. Marynick SP et al: Androgen excess in cystic acne. *N Engl J Med* **308**:981-986, 1983
45. Levell MJ: Acne is not associated with abnormal plasma androgens. *Br J Dermatol* **120**:649, 1989
46. Chiu A, Chon S, Kimball A: The response of skin disease to stress. *Arch Dermatol* **139**:897-900, 2003
47. Pekkarinen A, Sonck C: Adrenocortical reserves in acne vulgaris: The urinary excretion of 17-ketosteroids and total 17-hydroxycorticosteroids. *Acta Derm Venereol (Stockh)* **42**:200, 1962
48. Baldwin HE: The interaction between acne vulgaris and the psyche. *Cutis* **70**:133-139, 2002
49. Mallon E et al: The quality of life in acne: A comparison with general medical conditions using generic questionnaires. *Br J Dermatol* **140**(4):672-676, 1999
50. Cunliffe WJ: Acne and unemployment. *Br J Dermatol* **115**:386, 1986
51. Herane MI, Ando I: Acne in infancy and acne genetics. *Dermatology* **206**(1):24-28, 2003
52. Kaminsky A: Less common methods to treat acne. *Dermatology* **206**(1):68-73, 2003
53. Gollnick H, Schramm M: Topical therapy in acne. *J Eur Acad Dermatol Venereol* **11**(1), 1998
54. Gollnick H, Graupe K: Azeleic acid for the treatment of acne: Comparative trials. *J Dermatol Treat* **1**:27, 1989
55. Gollnick H et al: Management of acne: A report from a Global Alliance to improve outcomes in acne. *J Am Acad Dermatol* **49**(Suppl. 1), S1-S37, 2003

56. Eady E et al: The effects of acne treatment with a combination of benzoyl peroxide and erythromycin on skin carriage of erythromycin-resistant propionibacteria. *Br J Dermatol* **134**:107-113, 1996
57. Raimer S et al: Efficacy and safety of dapsone gel 5% for the treatment of acne vulgaris in adolescents. *Cutis* **81**(2):171-178, 2008
58. Lucky AW et al: Dapsone gel 5% for the treatment of acne vulgaris: Safety and efficacy of long-term (1 year) treatment. *J Drugs Dermatol* **6**(10):981-987, 2007
59. Piette WW et al: Hematologic safety of dapsone gel, 5%, for topical treatment of acne vulgaris. *Arch Dermatol* **144**(12):1564-1570, 2008
60. Dubina MI et al: Interaction of topical sulfacetamide and topical dapsone with benzoyl peroxide. *Arch Dermatol* **145**(9):1027-1029, 2009
61. Brecher AR, Orlow SJ: Oral retinoid therapy for dermatologic conditions in children and adolescents. *J Am Acad Dermatol* **49**:171-182, 2003
62. Fisher FJ, Voorhees JJ: Molecular mechanisms of retinoid actions in skin. *FASEB J* **10**:1002-1013, 1996
63. Shalita A, Weiss J, Chalker DK: A comparison of the efficacy and safety of adapalene gel 0.1% and tretinoin gel 0.025% in the treatment of acne vulgaris: A multicenter trial. *J Am Acad Dermatol* **34**:482-485, 1996
64. Cunliffe W et al: Clinical efficacy and safety comparison of adapalene gel and tretinoin gel in the treatment of acne vulgaris. *J Am Acad Dermatol* **36**:S126-S134, 1997
65. Thiboutot D et al: Efficacy and tolerability of adapalene 0.3% gel compared to tazarotene 0.1% gel in the treatment of acne vulgaris. *J Drugs Dermatol* **7**(Suppl. 6):s3-s10, 2008
66. Tan JK, Tan JKL: Adapalene 0.1% and benzoyl peroxide 2.5%: A novel combination for treatment of acne vulgaris. *Skin Ther Lett* **14**(6):4-5, 2009
67. Thiboutot DM et al: Adapalene-benzoyl peroxide, a fixed-dose combination for the treatment of acne vulgaris: Results of a multicenter, randomized double-blind, controlled study. *J Am Acad Dermatol* **57**(5):791-799, 2007
68. Webster G et al: Efficacy and tolerability of once-daily tazarotene 0.1% gel versus once-daily tretinoin 0.025% gel in the treatment of facial acne vulgaris: A randomized trial. *Cutis* **67**(Suppl. 6):4-9, 2001
69. Leyden JJ et al: Once-daily tazarotene 0.1% gel versus once-daily tretinoin 0.1% microsphere gel for the treatment of facial acne vulgaris: A double-blind randomized trial. *Cutis* **69**(Suppl. 2):12-19, 2002
70. Gough A: Minocycline-induced autoimmune hepatitis and systemic lupus erythematosus-like syndrome. *Br Med J* **312**:169, 1996
71. Goulden V: Safety of long-term high-dose minocycline in the treatment of acne. *Br J Dermatol* **134**:693, 1966
72. Fernandez-Obregon AC: Azithromycin for the treatment of acne. *Int J Dermatol* **39**(1):45-50, 2000
73. Fenner JA, Wiss K, Levin NA: Oral cephalexin for acne vulgaris: Clinical experience with 93 patients. *Pediatr Dermatol* **25**(2):179-183, 2008
74. Eady EA: Bacterial resistance in acne. *Dermatology* **196**(1):59-66, 1998
75. Ross JI et al: Antibiotic-resistant acne: Lessons from Europe [see comment]. *Br J Dermatol* **148**(3):467-478, 2003
76. Speroff L, DeCherney A: Evaluation of a new generation of oral contraceptives. *Obstet Gynecol* **81**:1034-1047, 1993
77. Lucky A et al: Effectiveness of norgestimate and ethinyl estradiol in treating moderate acne vulgaris. *J Am Acad Dermatol* **37**:746-754, 1997
78. Maloney M et al: Use of a low-dose oral contraceptive containing norethindrone acetate and ethinyl estradiol in the treatment of moderate acne vulgaris. *Clin J Women's Health* **1**:124-131, 2001
79. Thiboutot D et al: A randomized, controlled trial of a low-dose contraceptive containing 20 mg of ethinylestradiol and 100 mg of levonorgestrel for acne treatment. *Fertil Steril* **76**:461-468, 2001
80. Pochi P, Strauss J: Sebaceous gland inhibition from combined glucocorticoid-estrogen treatment. *Arch Dermatol* **112**:1108, 1976
81. Faloia E et al: Treatment with a gonadotropin-releasing hormone agonist in acne or idiopathic hirsutism. *J Endocrinol Invest* **16**:675-677, 1993
82. Goodfellow A et al: Oral spironolactone improves acne vulgaris and reduces sebum excretion. *Br J Dermatol* **111**:209-214, 1984
83. Kronic A, Ciurea A, Scheman A: Efficacy and tolerance of acne treatment using both spironolactone and a combined contraceptive containing drospirenone. *J Am Acad Dermatol* **58**(1):60-62, 2008

84. <http://www.drugs.com/pro/aldactone.html#Precautions>, Feb 28, 2010
85. Cusan L et al: Treatment of hirsutism with the pure antiandrogen flutamide. *J Am Acad Dermatol* 23:462-469, 1990
86. Wysowski D et al: Fatal and nonfatal hepatotoxicity associated with flutamide. *Ann Int Med* 118:860-864, 1993
87. Peck GL: Prolonged remissions of cystic acne with 13-cis-retinoic acid. *N Engl J Med* 300:329, 1979
88. Pochi PE et al: Report of the Consensus Conference on Acne Classification. Washington, D.C., March 24 and 25, 1990. *J Am Acad Dermatol* 24(3):495-500, 1991
89. Strauss JS, Stranieri AM: Changes in long-term sebum production from isotretinoin therapy. *J Am Acad Dermatol* 6:751, 1982
90. Leyden JJ, McGinley KJ: Effect of 13-cis-retinoic acid on sebum production and Propionibacterium acnes in severe nodulocystic acne. *Arch Dermatol* 272:331, 1982
91. Weismann A: Reduction of bacterial skin flora during treatment with 13-cis-retinoic acid. *Arch Dermatol* 270:179, 1981
92. Windhorst DB, Nigra T: General clinical toxicity of oral retinoids. *J Am Acad Dermatol* 6:675, 1982
93. Wysowski D, Pitts M, Beitz J: An analysis of reports of depression and suicide in patients treated with isotretinoin. *J Am Acad Dermatol* 45:515-519, 2001
94. Marqueling AL et al: Depression and suicidal behavior in acne patients treated with isotretinoin: A systematic review. *Semin Cutan Med Surg* 26(4):210-220, 2007
95. Bigby M: Does isotretinoin increase the risk of depression? *Arch Dermatol* 144(9):1197-1199, 2008
96. Kaymak Y et al: Comparison of depression, anxiety and life quality in acne vulgaris patients who were treated with either isotretinoin or topical agents. *Int J Dermatol* 48(1):41-46, 2009
97. Birmaher B et al: Childhood and adolescent depression: A review of the past 10 years. Part II. *J Am Acad Child Adolesc Psychiatry* 35(12):1575-1583, 1996
98. Crockett SD et al: A causal association between isotretinoin and inflammatory bowel disease has yet to be established. *Am J Gastroenterol* 104(10):2387-2393, 2009
99. Bernstein CN et al: Isotretinoin is not associated with inflammatory bowel disease: A population-based case-control study. *Am J Gastroenterol* 104(11):2774-2778, 2009
100. DiGiovanna JJ et al: Effect of a single course of isotretinoin therapy on bone mineral density in adolescent patients with severe, recalcitrant, nodular acne [see comment]. *J Am Acad Dermatol* 51(5):709-717, 2004
101. Pittsley RA, Yoder FW: Retinoid hyperostosis: Skeletal toxicity associated with long-term administration of 13-cis-retinoic acid for refractory ichthyosis. *N Engl J Med* 308:1012, 1983
102. Stern RS: Isotretinoin and pregnancy. *J Am Acad Dermatol* 10:851, 1984
103. Lammer EJ: Retinoic acid embryopathy. *N Engl J Med* 310:1023, 1984
104. Lehuicher C, Weber-Buisset M: Isotretinoin and acne in practice: A prospective analysis of 188 cases over 9 years. *Dermatology* 186:123-128, 1993
105. Adebamowo CA et al: High school dietary dairy intake and teenage acne [see comment]. *J Am Acad Dermatol* 52(2):207-214, 2005
106. Cordrain L et al: Acne vulgaris: A disease of western civilization. *Arch Dermatol* 138:1584-1590, 2002
107. Spencer EH et al: Diet and acne: A review of the evidence. *Int J Dermatol* 48(4):339-347, 2009
108. Cunliffe WJ: *Acne*. London, Dunitz, 1989
109. Sigurdsson V, Knulst AC, van Weelden H: Phototherapy of acne vulgaris with visible light. *Dermatology* 194(3):256-260, 1997
110. Kjelstad B, Johnsson A: An action spectrum for blue and near UV inactivation of Propionibacterium acnes; with emphasis on a possible porphyrin photosensitization. *Photochem Photobiol* 43(1):67-70, 1986
111. Suh DH, Kwon TE, Youn JI: Changes of comedonal cytokines and sebum secretion after UV irradiation in acne patients. *Eur J Dermatol* 12(2):139-144, 2002
112. Mills OH, Kligman AM: UV phototherapy and photocemotherapy of acne vulgaris. *Arch Dermatol* 114(2):221-223, 1978
113. Lassus A, Salo O, Forstrom L: Treatment of acne with selective UV-phototherapy (SUP): An open trial. *Dermatol Monatsschr* 169(6):376-379, 1983
114. Meffert H, Kolzsch J, Laubstein B: Phototherapy of acne vulgaris with the 'Tur' UV 10 body section irradiation unit. *Dermatol Monatsschr* 172(1):9-13, 1986
115. Meffert H, Laubstein B, Kolzsch J: Phototherapy of acne vulgaris with the UVA irradiation instrument TBG 400. *Dermatol Monatsschr* 172(2):105-106, 1986

116. van Weelden H, de Gruijl FR, van der Putte SC: The carcinogenic risks of modern tanning equipment: Is UV-A safer than UV-B? *Arch Dermatol Res* **280**(5):300-307, 1988
117. Lee WL, Shalita A, Poh-Fitzpatrick MB: Comparative studies of porphyrin production in *Propionibacterium acnes* and *Propionibacterium granulosum*. *J Bacteriol* **133**(2):811-815, 1978
118. Arakane F, Ryu A, Hayashi C: Singlet oxygen (1 delta g) generation from coproporphyrin in *Propionibacterium acnes* on irradiation. *Biochem Biophys Res Commun* **223**(3):578-582, 1996
119. Shalita A: International multicenter clearlight acne phototherapy study. In: *EADV Annual Conference*, Munich, 2002
120. Haedersdal M, Togsverd-Bo K, Wulf HC: Evidence-based review of lasers, light sources and photodynamic therapy in the treatment of acne vulgaris. *J Eur Acad Dermatol Venereol* **22**(3):267-278, 2008
121. Melo TB: Uptake of protoporphyrin and violet light photodestruction of *Propionibacterium acnes*. *Z Naturforsch* **42**(1-2):123-128, 1987
122. Charakida A et al: Phototherapy in the treatment of acne vulgaris. *Am J Clin Dermatol* **5**(4):211-216, 2004
123. Ibbotson SH: Topical 5-aminolaevulinic acid photodynamic therapy for the treatment of skin conditions other than non-melanoma skin cancer. *Br J Dermatol* **146**(2):178-188, 2002
124. Hongcharu W et al: Topical ALA-photodynamic therapy for the treatment of acne vulgaris. *J Invest Dermatol* **115**(2):183-192, 2000
125. Bowes LE, Manstein D, Anderson RR: Effects of 532 nm KTP laser exposure on acne and sebaceous glands. *Lasers Surg Med* **18**:S6-S7, 2003
126. Seaton E, Charakida A, Mouser A: Pulsed dye laser treatment for inflammatory acne vulgaris: Randomised controlled trial. *Lancet* **362**:1347-1352, 2003
127. Paithankar D et al: Acne treatment with a 1,450 nm wavelength laser and cryogen spray cooling. *Lasers Surg Med* **31**:106-114, 2002
128. Friedman P et al: Treatment of inflammatory facial acne vulgaris with the 1450-nm diode laser: A pilot study. *Dermatol Surg* **30**:147-151, 2004
129. Lloyd J, Mirkov M: Selective photothermolysis of the sebaceous glands for acne treatment. *Lasers Surg Med* **31**:115-120, 2002
130. Chernoff G: The utilization of 1320 nm Nd: Yag energy for the treatment of active acne vulgaris. In: White Paper, Cooltouch Inc., 2004
131. Boineau D, Angel S, Nicole A: Treatment of active acne with an Er: Glass laser. *Lasers in Surgery & Medicine* **34**:S55, 2004
132. Wanitphakdeedecha R et al: Photopneumatic therapy for the treatment of acne. *J Drugs Dermatol* **8**(3):239-241, 2009
133. Gold MH et al: Efficacy of a novel combination of pneumatic energy and broadband light for the treatment of acne. *J Drugs Dermatol* **7**(7):639-642, 2008
134. Henderson CA, Taylor J, Cunliffe WJ: Sebum excretion rates in mothers and neonates. *Br J Dermatol* **142**(1):110-111, 2000
135. Bernier V et al: Skin colonization by *Malassezia* species in neonates: A prospective study and relationship with neonatal cephalic pustulosis [see comment]. *Arch Dermatol* **138**(2):215-218, 2002
136. Bergman JN, Eichenfield LF: Neonatal acne and cephalic pustulosis: Is malassezia the whole story? *Arch Dermatol* **138**(2):255-257, S118-120, 2002
137. Iqbal M, Kolodney MS: Acne fulminans with synovitis-acne-pustulosis-hyperostosis-osteitis (SAPHO) syndrome treated with infliximab. *J Am Acad Dermatol* **52**(5 Suppl. 1), 2005[c1]
138. Kerrison C et al: Pamidronate in the treatment of childhood SAPHO syndrome. *Rheumatology* **43**(10):1246-1251, 2004
139. Stichweh DS, Punaro M, Pascual V: Dramatic improvement of pyoderma gangrenosum with infliximab in a patient with PAPA syndrome. *Pediatr Dermatol* **22**(3):262-265, 2005
140. Dierselhuis MP et al: Anakinra for flares of pyogenic arthritis in PAPA syndrome. *Rheumatology* **44**(3):406-408, 2005
141. Helander I, Aho HJ: Solid facial edema as a complication of acne vulgaris: Treatment with isotretinoin and clofazimine. *Acta Derm Venereol* **67**(6):535-537, 1987
142. Friedman SJ, Fox BJ, Albert HL: Solid facial edema as a complication of acne vulgaris: Treatment with isotretinoin. *J Am Acad Dermatol* **15**(2 Pt. 1):286-289, 1986
143. Lane DE: Polycystic ovary syndrome and its differential diagnosis. *Obstet Gynecol Surv* **61**(2):125-135, 2006
144. Merke DP, Bornstein SR: Congenital adrenal hyperplasia. *Lancet* **365**(9477):2125-2136, 2005
145. Degitz K et al: Congenital adrenal hyperplasia and acne in male patients. *Br J Dermatol* **148**(6):1263-1266, 2003

146. Harrell B, Rudolph A: Kelp diet: A cause of acneiform eruption. *Arch Dermatol* **112**:560, 1976
147. Plewig G, Jansen T: Acneiform dermatoses. *Dermatology* **196**(1):102-107, 1998
148. Busam K, Capodiecì P, Motzer R: Cutaneous side-effects in cancer patients treated with anti-epidermal growth factor receptor antibody C225. *Br J Dermatol* **144**:1169-1176, 2001
149. Perez-Soler R et al: HER1/EGFR inhibitor-associated rash: Future directions for management and investigation outcomes from the HER1/EGFR inhibitor rash management forum [see comment]. *Oncologist* **10**(5):345-356, 2005
150. Kuflik JH, Schwartz RA: Acneiform eruptions. *Cutis* **66**(2):97-100, 2000
151. Dunagin WG: Cutaneous signs of systemic toxicity due to dioxins and related chemicals. *J Am Acad Dermatol* **10**(4):688-700, 1984
152. Pastor MA et al: Chloracne: Histopathologic findings in one case. *J Cutan Pathol* **29**(4):193-199, 2002
153. Friedman SJ, Su WPD: Favre-Racouchot syndrome associated with radiation therapy. *Cutis* **31**:306-310, 1983
154. Patterson WM, Fox MD, Schwartz RA: Favre-Racouchot disease. *Int J Dermatol* **43**(3):167-169, 2004
155. Risma KA, Lucky AW: Pseudoacne of the nasal crease: A new entity? *Pediatr Dermatol* **21**(4):427-431, 2004