

# BÖLÜM

# 69

## SELÜLİT VE DİĞER BAKTERİYEL DERİ ENFEKSİYONLARI

Ebru SOYDAN YAPRAK<sup>1</sup>

### GİRİŞ

Selülit ve veya apse lezyonları en sık deri ve yumuşak doku enfeksiyonları (YDE) arasındadır (1,2). Selülit (erizipel dahil), ciltte kızarıklık, ödem ve ısı artışı ile seyreder; cilt bariyerindeki açıklıklardan bakterilerin girişi ile oluşmaktadır (3). Cilt apseleri, dermis veya subkutan dokuda yerleşimli püy birikimidir. Her iki durumda yanlış tanı konulması sıktır ve ayırıcı tanıları dikkatle düşünülmelidir.

### EPİDEMİYOLOJİ

Selülit en sık orta yaşlı ve yaşlı erişkinlerde, erizipel ise küçük çocuklarda ve yaşlı erişkinlerde görülmektedir (4,5). Selülit insidansı yılda yaklaşık 200/100.000 vakadır ve sıklıkla sıcak aylarda artar(6). Selülit ve/veya cilt apsesi riski ile ilişkili predispozan faktörlerden bazıları şunlardır (7-15).

1. Travma nedeniyle cilt bariyerinin bozulması (dermabrazyon, penetran yara, bası yarası, venöz bacak ülseri, böcek ısırığı, intravenöz ilaç kullanımı gibi)
2. Dermatozlar ve dermatitler (egzama, radyasyon tedavisi, sedef hastalığı gibi)
3. Lenfatik drenajın bozulmasına bağlı ödem

4. Venöz yetmezliğe bağlı ödem
5. Obezite
6. İmmünoşüpresyon (diyabet veya HIV enfeksiyonu gibi)
7. Önceden var olan deri enfeksiyonu (tinea pedis, impetigo, suçiçeği gibi)
8. Koroner arter by-pass greft cerrahisi için safen ven grefti alınması

Cerrahi prosedürleri (safenöz venektomi veya lenf nodu diseksiyonu gibi) takiben veya konjenital olarak lenfatik ödem oluşabilmektedir, 2012-2017 yıllarında ABD’de yapılan bir retrospektif bir araştırmada selülit nedeniyle 165.000’den fazla hastane başvurularının analizinde, vakaların çoğu (%92) lenfödem ile ilişkilendirilmiştir(16).

Pürülan cilt ve YDE’nin için ek bir risk faktörü, metisiline dirençli S. aureus enfeksiyonu (MRSA) veya taşıyıcısı olan diğer kişilerle yakın temastır.

### ETİYOLOJİ

Selülitin en sık nedenleri beta-hemolitik streptokoklardır (A, B, C, G ve F grupları), en sık A grubu S. pyogenes; S. aureus (MRSA dahil) daha az

<sup>1</sup> Uzm. Dr., Özel Gözde Hastanesi Sitmapınarı, Deri ve Zührevi Hastalıkları Kliniği, dr.ebru\_91@hotmail.com

dikloksasilin tedavileri metisiline duyarlı *S.aureus* infeksiyonları için uygundur. Eritromisin ve klindamisin impetigo da kullanılabilmeyle birlikte, bazı *S. aureus* ve GAS suşları bu tedavilere dirençli olabilir. Yaygın impetigo veya ektimada yalnızca beta-hemolitik streptokoklar saptanırsa, tercih edilen tedavi oral penisilindir(83). Streptokoksik infeksiyonlarda, yapılan bir çalışmada oral trimetoprim-sülfametoksazolün enjektabil penisilin tedavisine etkili bir alternatif olabileceği bildirilmiştir(100).

Metisiline dirençli olmayan *S.aureus*'a bağlı impetigoda birinci basamak tedavi olmasa da, kısa bir oral trimetoprim-sülfametoksazol kürü, stafilokoksik ve streptokoksik impetigo için ucuz bir oral alternatif olabilir(48).

Şüpheli veya doğrulanmış MRSA infeksiyonu olan hastalar, izole etkenin duyarlı olması koşuluyla trimetoprim-sülfametoksazol, klindamisin veya doksisisiklin ile tedavi edilebilir (83).

Tetrasiklinler, sekiz yaşından küçük çocuklarda kalıcı diş renklenmesine neden olabileceği de doksisisiklin diğer tetrasiklinlere göre kalsiyuma daha az bağlanır(101). Bu nedenle, bu yaş grubunda kısa süreli (<21 gün) doksisisiklin verilebilir(102).

Hastalar doksisisiklin ile ilişkili fotosensitivite konusunda uyarılmalı ve aşırı güneşe maruziyetten kaçınılmalıdırlar(103).

Kabuklu lezyonlar nazikçe ılık-sabunlu su yıkanabilir. El yıkama, çocuklar arasında yayılımı azaltmak için çok önemlidir, drene olan akıntılı lezyonlar mutlaka kapalı pansuman edilmelidir.

İmpetigo infeksiyonunun hem bulaştırıcı olması, hem de okul çağı çocuklarında görülmesi nedeniyle okula dönüş süresi ve eğitimin devamı da çok önemli olduğundan hastalar, etkili bir antimikrobiyal tedaviden 24. saat sonra okula dönebilirler.

## KAYNAKLAR

1. Liu C, Bayer A, Cosgrove SE, Daum RS, et al. Clinical Practice Guidelines by the Infectious Diseases Society of America for the Treatment of Methicillin-Resistant *Staphylococcus aureus* Infections in Adults and Children. *Clin Infect Dis* [Internet]. 2011 Feb 1;52(3):e18–55.
2. Stevens DL, Bisno AL, Chambers HF, et al. Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by the infectious diseases society of America. *Clin Infect Dis* [Internet]. 2014 Jul 15;59(2):147–59.
3. Raff AB, Kroshinsky D. Cellulitis: A Review. *JAMA* [Internet]. 2016 Jul 19;316(3):325–37.
4. Ellis Simonsen SM, van Orman ER, Hatch BE, et al. Cellulitis incidence in a defined population. *Epidemiol Infect* [Internet]. 2006 Apr 7;134(2):293–9.
5. Eriksson B, Jorup-Rönström C, Karkkonen K, et al. Erysipelas: clinical and bacteriologic spectrum and serological aspects. *Clin Infect Dis* [Internet]. 1996 Nov 1;23(5):1091–8.
6. McNamara DR, Tleyjeh IM, Berbari EF, et al. Incidence of Lower-Extremity Cellulitis: A Population-Based Study in Olmsted County, Minnesota. *Mayo Clin Proc* [Internet]. 2007 Jul;82(7):817–21.
7. McNamara DR, Tleyjeh IM, Berbari EF, et al. A predictive model of recurrent lower extremity cellulitis in a population-based cohort. *Arch Intern Med* [Internet]. 2007 Apr 9;167(7):709–15.
8. Dan M, Heller K, Shapira I, et al. Incidence of erysipelas following venectomy for coronary artery bypass surgery. *Infection* [Internet]. 1987 Mar;15(2):107–8.
9. Baddour LM, Bisno AL. Recurrent cellulitis after saphenous venectomy for coronary bypass surgery. *Ann Intern Med* [Internet]. 1982 Oct 1;97(4):493–6.
10. Baddour LM. Breast cellulitis complicating breast conservation therapy. *J Intern Med* [Internet]. 1999 Jan;245(1):5–9.
11. Dankert J, Bouma J. Recurrent acute leg cellulitis after hysterectomy with pelvic lymphadenectomy. *Br J Obstet Gynaecol* [Internet]. 1987 Aug;94(8):788–90.
12. Semel JD, Goldin H. Association of athlete's foot with cellulitis of the lower extremities: diagnostic value of bacterial cultures of ipsilateral interdigital space samples. *Clin Infect Dis* [Internet]. 1996 Nov 1;23(5):1162–4.

13. Gordon RJ, Lowy FD. Bacterial infections in drug users. *N Engl J Med* [Internet]. 2005 Nov 3;353(18):1945–54.
14. Hilmarsdóttir I, Valsdóttir F. Molecular typing of Beta-hemolytic streptococci from two patients with lower-limb cellulitis: identical isolates from toe web and blood specimens. *J Clin Microbiol* [Internet]. 2007 Sep;45(9):3131–2.
15. Quirke M, Ayoub F, McCabe A, et al. Boland F, Smith B, O’Sullivan R, et al. Risk factors for non-purulent leg cellulitis: a systematic review and meta-analysis. *Br J Dermatol* [Internet]. 2017 Aug;177(2):382–94.
16. Lopez M, Roberson ML, Strassle PD, et al. Epidemiology of Lymphedema-related admissions in the United States: 2012–2017. *Surg Oncol* [Internet]. 2020 Dec;35:249–53.
17. Jeng A, Beheshti M, Li J, et al. The role of beta-hemolytic streptococci in causing diffuse, nonculturable cellulitis: a prospective investigation. *Medicine (Baltimore)* [Internet]. 2010 Jul;89(4):217–26.
18. Parada JP, Maslow JN. Clinical syndromes associated with adult pneumococcal cellulitis. *Scand J Infect Dis* [Internet]. 2000 Jan 8;32(2):133–6.
19. Swartz MN. Clinical practice. Cellulitis. *N Engl J Med* [Internet]. 2004 Feb 26;350(9):904–12.
20. Porras MC, Martínez VC, Ruiz IM, Encinas PM, Fernandez MT, García J, et al. Acute cellulitis: an unusual manifestation of meningococcal disease. *Scand J Infect Dis* [Internet]. 2001 Jan 8;33(1):56–9.
21. Patel M, Ahrens JC, Moyer D V, et al. Pneumococcal soft-tissue infections: a problem deserving more recognition. *Clin Infect Dis* [Internet]. 1994 Jul 1;19(1):149–51.
22. Capdevila O, Grau I, Vellido M, et al. Bacteremic pneumococcal cellulitis compared with bacteremic cellulitis caused by *Staphylococcus aureus* and *Streptococcus pyogenes*. *Eur J Clin Microbiol Infect Dis* [Internet]. 2003 Jun 1;22(6):337–41.
23. Page KR, Karakousis PC, Maslow JN. Postoperative pneumococcal cellulitis in systemic lupus erythematosus. *Scand J Infect Dis* [Internet]. 2003 Feb 8;35(2):141–3.
24. Givner LB, Mason EO, Barson WJ, et al. Pneumococcal facial cellulitis in children. *Pediatrics* [Internet]. 2000 Nov 1;106(5):E61.
25. Summanen PH, Talan DA, Strong C, et al. Bacteriology of skin and soft-tissue infections: comparison of infections in intravenous drug users and individuals with no history of intravenous drug use. *Clin Infect Dis* [Internet]. 1995 Jun 1;20 Suppl 2(Supplement\_2):S279–82.
26. Bisno AL, Stevens DL. Streptococcal infections of skin and soft tissues. *N Engl J Med* [Internet]. 1996 Jan 25;334(4):240–5.
27. Barzilai A, Choen HA. Isolation of group A streptococci from children with perianal cellulitis and from their siblings. *Pediatr Infect Dis J* [Internet]. 1998 Apr;17(4):358–60.
28. Thorsteinsdóttir B, Tleyjeh IM, Baddour LM. Abdominal wall cellulitis in the morbidly obese. *Scand J Infect Dis* [Internet]. 2005 Jan 8;37(8):605–8.
29. Bruun T, Oppegaard O, Hufthammer KO, et al. Early Response in Cellulitis: A Prospective Study of Dynamics and Predictors. *Clin Infect Dis* [Internet]. 2016 Oct 15;63(8):1034–41.
30. Fitch MT, Manthey DE, McGinnis HD, Nicks BA, Pariyadath M. Abscess Incision and Drainage. *N Engl J Med* [Internet]. 2007 Nov 8;357(19):e20.
31. Miller LG, Quan C, Shay A, et al. A prospective investigation of outcomes after hospital discharge for endemic, community-acquired methicillin-resistant and -susceptible *Staphylococcus aureus* skin infection. *Clin Infect Dis* [Internet]. 2007 Feb 15;44(4):483–92.
32. Woo PC, Lum PN, Wong SS, et al. Cellulitis complicating lymphoedema. *Eur J Clin Microbiol Infect Dis* [Internet]. 2000 Apr 4;19(4):294–7.
33. Peralta G, Padrón E, Roiz MP, et al. Risk factors for bacteremia in patients with limb cellulitis. *Eur J Clin Microbiol Infect Dis* [Internet]. 2006 Oct 16;25(10):619–26.
34. Torres J, Avalos N, Echols L, et al. Low yield of blood and wound cultures in patients with skin and soft-tissue infections. *Am J Emerg Med* [Internet]. 2017 Aug;35(8):1159–61.
35. Crisp JG, Takhar SS, Moran GJ, et al. Inability of polymerase chain reaction, pyrosequencing, and culture of infected and uninfected site skin biopsy specimens to identify the cause of cellulitis. *Clin Infect Dis* [Internet]. 2015 Dec 1;61(11):1679–87.
36. Beltran J. MR imaging of soft-tissue infection. *Magn Reson Imaging Clin N Am* [Internet]. 1995 Nov;3(4):743–51.
37. Schmid MR, Kossman T, Duewell S. Differentiation of necrotizing fasciitis and cellulitis using MR imaging. *AJR Am J Roentgenol* [Internet]. 1998 Mar;170(3):615–20.
38. Bisno AL, Nelson KE. Type specific opsonic antibodies in streptococcal pyoderma. *Infect Immun* [Internet]. 1974 Dec [cited 2022 Jun 22];10(6):1356–61.

39. Halilovic J, Heintz BH, Brown J. Risk factors for clinical failure in patients hospitalized with cellulitis and cutaneous abscess. *J Infect* [Internet]. 2012 Aug;65(2):128–34.
40. Dall L, Peterson S, Simmons T, Dall A. Rapid resolution of cellulitis in patients managed with combination antibiotic and anti-inflammatory therapy. *Cutis* [Internet]. 2005 Mar;75(3):177–80.
41. Bergkvist PI, Sjöbeck K. Antibiotic and prednisolone therapy of erysipelas: a randomized, double blind, placebo-controlled study. *Scand J Infect Dis* [Internet]. 1997 Jan 8;29(4):377–82.
42. Lee RA, Centor RM, Humphrey LL, et al. Appropriate Use of Short-Course Antibiotics in Common Infections: Best Practice Advice From the American College of Physicians. *Ann Intern Med* [Internet]. 2021 Jun;174(6):822–7.
43. Thomas KS, Crook AM, Nunn AJ, et al. Penicillin to Prevent Recurrent Leg Cellulitis. *N Engl J Med* [Internet]. 2013 May 2;368(18):1695–703.
44. van Zuuren EJ, Fedorowicz Z, Alper B, et al. Penicillin to prevent recurrent leg cellulitis: a critical appraisal. *Br J Dermatol* [Internet]. 2014 Dec;171(6):1300–3.
45. Klemmpner MS, Styrt B. Prevention of recurrent staphylococcal skin infections with low-dose oral clindamycin therapy. *JAMA* [Internet]. 1988 Nov 11;260(18):2682–5.
46. Oh CC, Ko HCH, Lee HY, et al. Antibiotic prophylaxis for preventing recurrent cellulitis: a systematic review and meta-analysis. *J Infect* [Internet]. 2014 Jul;69(1):26–34.
47. Wilson W, Taubert KA, Gewitz M, et al. Prevention of infective endocarditis: guidelines from the American Heart Association: a guideline from the American Heart Association Rheumatic Fever, Endocarditis, and Kawasaki Disease Committee, Council on Cardiovascular Disease in the Young, and the Co. Circulation [Internet]. 2007 Oct 9;116(15):1736–54.
48. Miller LG, Daum RS, Creech CB, et al. Clindamycin versus trimethoprim-sulfamethoxazole for uncomplicated skin infections. *N Engl J Med* [Internet]. 2015 Mar 19;372(12):1093–103.
49. Vermandere M, Aertgeerts B, Agoritsas T, et al. Antibiotics after incision and drainage for uncomplicated skin abscesses: a clinical practice guideline. *BMJ* [Internet]. 2018 Feb 6;360:k243.
50. Stevens DL, Bisno AL, Chambers HF, et al. Executive summary: Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by the infectious diseases society of America. *Clin Infect Dis* [Internet]. 2014 Jul 15 [cited 2022 Jun 20];59(2):147–59.
51. Laureano AC, Schwartz RA, Cohen PJ. Facial bacterial infections: folliculitis. *Clin Dermatol* [Internet]. 2014 Nov;32(6):711–4.
52. Luelmo-Aguilar J, Santandreu MS. Folliculitis: Recognition and management. *Am J Clin Dermatol*. 2004;5(5):301–10.
53. Durdu M, Ilkit M. First step in the differential diagnosis of folliculitis: cytology. *Crit Rev Microbiol* [Internet]. 2013 Feb [cited 2022 Jun 20];39(1):9–25.
54. Jang KA, Kim SH, Choi JH, et al. Viral folliculitis on the face. *Br J Dermatol* [Internet]. 2000 Mar;142(3):555–9.
55. Bouscarat F, Maubec E, Matheron S, et al. Immune recovery inflammatory folliculitis. *AIDS* [Internet]. 2000 Mar 31 [cited 2022 Jun 20];14(5):617–8.
56. Yu Y, Cheng AS, Wang L, et al. Hot tub folliculitis or hot hand-foot syndrome caused by *Pseudomonas aeruginosa*. *J Am Acad Dermatol* [Internet]. 2007 Oct;57(4):596–600.
57. Julià Manresa M, Vicente Villa A, Gené Giralt A, et al. *Aeromonas hydrophila* folliculitis associated with an inflatable swimming pool: mimicking *Pseudomonas aeruginosa* infection. *Pediatr Dermatol* [Internet]. 2009 Sep;26(5):601–3.
58. Neubert U, Jansen T, Plewig G. Bacteriologic and immunologic aspects of gram-negative folliculitis: a study of 46 patients. *Int J Dermatol* [Internet]. 1999 Apr;38(4):270–4.
59. Durdu M, Güran M, Ilkit M. Epidemiological characteristics of *Malassezia* folliculitis and use of the May-Grünwald-Giemsa stain to diagnose the infection. *Diagn Microbiol Infect Dis* [Internet]. 2013 Aug;76(4):450–7.
60. Rubenstein RM, Malerich SA. *Malassezia* (pityrosporum) folliculitis. *J Clin Aesthet Dermatol* [Internet]. 2014 Mar;7(3):37–41.
61. Prindaville B, Belazarian L, Levin NA, et al. *Pityrosporum* folliculitis: A retrospective review of 110 cases. *J Am Acad Dermatol* [Internet]. 2018 Mar;78(3):511–4.
62. Ilkit M, Durdu M, Karakaş M. Majocchi's granuloma: a symptom complex caused by fungal pathogens. *Med Mycol* [Internet]. 2012 Jul;50(5):449–57.
63. Foti C, Calvario A, D'Ovidio R, et al. Recalcitrant scalp folliculitis: a possible role of herpes simplex virus type 2. *New Microbiol* [Internet]. 2005 Apr;28(2):157–9.

64. Oon HH, Lim KS, Chong W-S, et al. Erythematous and edematous eruption of the face. Herpes folliculitis. *Int J Dermatol* [Internet]. 2010 Sep 30;49(9):973–4.
65. Böer A, Herder N, Winter K, et al. Herpes folliculitis: clinical, histopathological, and molecular pathologic observations. *Br J Dermatol* [Internet]. 2006 Apr;154(4):743–6.
66. Rusiecka-Ziółkowska J, Nokiel M, Fleischer M. Demodex - an old pathogen or a new one? *Adv Clin Exp Med* [Internet]. 2014;23(2):295–8.
67. Wright AM, Mody DR, Anton RC, et al. Aberrant staining with Grocott's methenamine silver: utility beyond fungal organisms. *J Am Soc Cytopathol* [Internet]. 2017 Nov;6(6):223–7.
68. Kain R. Histopathology. *Methods Mol Biol* [Internet]. 2017 [cited 2022 Jun 21];1508:185–93.
69. Ramakrishnan K, Salinas RC, Agudelo Higuaita NI. Skin and Soft Tissue Infections. *Am Fam Physician* [Internet]. 2015 Sep 15;92(6):474–83.
70. Williamson DA, Monecke S, Heffernan H, et al. High usage of topical fusidic acid and rapid clonal expansion of fusidic acid-resistant *Staphylococcus aureus*: a cautionary tale. *Clin Infect Dis* [Internet]. 2014 Nov 15;59(10):1451–4.
71. van Bijnen EME, Paget WJ, den Heijer CDJ, et al. Primary care treatment guidelines for skin infections in Europe: congruence with antimicrobial resistance found in commensal *Staphylococcus aureus* in the community. *BMC Fam Pract* [Internet]. 2014 Oct 25;15(1):175.
72. Cohen PR. Community-acquired methicillin-resistant *Staphylococcus aureus* skin infections: implications for patients and practitioners. *Am J Clin Dermatol* [Internet]. 2007;8(5):259–70.
73. Rawla P, Padala SA LD. Poststreptococcal Glomerulonephritis. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2021.
74. Hewitt WD, Farrar WE. Bacteremia and ecthyma caused by *Streptococcus pyogenes* in a patient with acquired immunodeficiency syndrome. *Am J Med Sci* [Internet]. 1988 Jan;295(1):52–4.
75. Bowen AC, Mahé A, Hay RJ, et al. The Global Epidemiology of Impetigo: A Systematic Review of the Population Prevalence of Impetigo and Pyoderma. Reid SD, editor. *PLoS One* [Internet]. 2015 Aug 28;10(8):e0136789.
76. Romani L, Steer AC, Whitfield MJ, et al. Prevalence of scabies and impetigo worldwide: a systematic review. *Lancet Infect Dis* [Internet]. 2015 Aug;15(8):960–7.
77. Dajani AS, Ferrieri P, Wannamaker LW. Natural history of impetigo. II. Etiologic agents and bacterial interactions. *J Clin Invest* [Internet]. 1972 Nov 1;51(11):2863–71.
78. Darmstadt GL, Lane AT. Impetigo: an overview. *Pediatr Dermatol* [Internet]. 1994 Dec;11(4):293–303.
79. Demidovich CW, Wittler RR, Ruff ME, et al. Impetigo. Current etiology and comparison of penicillin, erythromycin, and cephalexin therapies. *Am J Dis Child* [Internet]. 1990 Dec 1;144(12):1313–5.
80. Baddour LM. Primary skin infections in primary care: An update. *Infections in Medicine*. 1993.
81. Liu Y, Kong F, Zhang X, et al. Antimicrobial susceptibility of *Staphylococcus aureus* isolated from children with impetigo in China from 2003 to 2007 shows community-associated methicillin-resistant *Staphylococcus aureus* to be uncommon and heterogeneous. *Br J Dermatol* [Internet]. 2009 Dec;161(6):1347–50.
82. Kikuta H, Shibata M, Nakata S, et al. Predominant Dissemination of PVL-Negative CC89 MRSA with SCC mec Type II in Children with Impetigo in Japan. *Int J Pediatr* [Internet]. 2011;2011:1–8.
83. Stevens DL, Bisno AL, Chambers HF, et al. Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by the infectious diseases society of America. *Clin Infect Dis* [Internet]. 2014 Jul 15;59(2):147–59.
84. Hirschmann J V. Impetigo: etiology and therapy. *Curr Clin Top Infect Dis* [Internet]. 2002;22:42–51.
85. Hartman-Adams H, Banvard C, Juckett G. Impetigo: diagnosis and treatment. *Am Fam Physician* [Internet]. 2014 Aug 15;90(4):229–35.
86. Johnson MK. Impetigo. *Adv Emerg Nurs J* [Internet]. 2020 Oct 1 [cited 2022 Jun 22];42(4):262–9.
87. Edlich RF, Winters KL, Britt LD, et al. Bacterial diseases of the skin. *J Long Term Eff Med Implants* [Internet]. 2005;15(5):499–510.
88. Donovan B, Rohrsheim R, Bassett I, et al. Bullous impetigo in homosexual men--a risk marker for HIV-1 infection? *Genitourin Med* [Internet]. 1992 Jun 1;68(3):159–61.
89. Amagai M, Matsuyoshi N, Wang ZH, et al. Toxin in bullous impetigo and staphylococcal scalded-skin syndrome targets desmoglein 1. *Nat Med* [Internet]. 2000 Nov;6(11):1275–7.
90. Eison TM, Ault BH, Jones DP, et al. Post-streptococcal acute glomerulonephritis in children: clinical features and pathogenesis. *Pediatr Nephrol* [Internet]. 2011 Feb 23;26(2):165–80.

91. Ilyas M, Tolaymat A. Changing epidemiology of acute post-streptococcal glomerulonephritis in Northeast Florida: a comparative study. *Pediatr Nephrol* [Internet]. 2008 Jul 1;23(7):1101–6.
92. Becquet O, Pasche J, Gatti H, Chenel C, et al. Acute post-streptococcal glomerulonephritis in children of French Polynesia: a 3-year retrospective study. *Pediatr Nephrol* [Internet]. 2010 Feb 1;25(2):275–80.
93. Gorani A, Oriani A, Cambiaghi S. Seborrheic dermatitis-like tinea faciei. *Pediatr Dermatol* [Internet]. 2005 May 1 [cited 2022 Jun 21];22(3):243–4.
94. Hayakawa K, Hirahara K, Fukuda T, et al. Risk factors for severe impetiginized atopic dermatitis in Japan and assessment of its microbiological features. *Clin Exp Dermatol* [Internet]. 2009 Jul [cited 2022 Jun 21];34(5).
95. Bologna J, Schaffer J V., Cerroni L. Ulcers. In: Jean Bologna, Julie Schaffer LC, editor. *Dermatology*. fourth. Elsevier; 201AD. p. 2084.
96. Bettens S, Delaere B, Glupczynski Y et al. Ecthyma gangrenosum in a non-neutropaenic, elderly patient: Case report and review of the literature. *Acta Clin Belg* [Internet]. 2008 Dec 9 [cited 2022 Jun 22];63(6):394–7.
97. Koning S, van der Sande R, Verhagen AP, et al. Suijlekom-Smit LW, Morris AD, Butler CC, et al. Interventions for impetigo. *Cochrane Database Syst Rev* [Internet]. 2012 Jan 18;1:CD003261.
98. Bass JW, Chan DS, Creamer KM, et al. Comparison of Oral Cephalexin, Topical Mupirocin and Topical Bacitracin For Treatment of Impetigo. *Pediatr Infect Dis J* [Internet]. 1997 Jul;16(7):708–10.
99. Cronin H, Mowad C. Anaphylactic reaction to bacitracin ointment. *Cutis* [Internet]. 2009 Mar;83(3):127–9.
100. van der Wouden JC, Koning S. Treatment of impetigo in resource-limited settings. *Lancet* (London, England) [Internet]. 2014 Dec 13;384(9960):2090–1.
101. Pöyhönen H, Nurmi M, Peltola V, Alaluusua S, et al. Dental staining after doxycycline use in children. *J Antimicrob Chemother* [Internet]. 2017 Oct 1 [cited 2022 Jun 22];72(10):2887–90.
102. Kimberlin DW, Brady MT, Jackson MA LS (Eds). Tetracyclines. In: American Academy of Pediatrics, editor. *Red Book: 2018 Report of the Committee on Infectious Diseases*. 31st ed. Itasca; 2018. p. 905.
103. Blakely KM, Drucker AM, Rosen CF. Drug-Induced Photosensitivity—An Update: Culprit Drugs, Prevention and Management [Internet]. Vol. 42, Drug Safety. *Drug Saf*; 2019 [cited 2022 Jun 22]. p. 827–47.