

Bullous Impetigo

AUTHORS:

John Placide, BS

Second-Year Medical Student, McGovern Medical School, University of Texas Health Science Center, Houston, Texas

Fatima Aly, MD

Assistant Professor of Pediatrics, McGovern Medical School, University of Texas Health Science Center, Houston, Texas

Lynnette Mazur, MD, MPH

Professor of Pediatrics, McGovern Medical School, University of Texas Health Science Center, Houston, Texas

CITATION:

Placide J, Aly F, Mazur L. Bullous impetigo [published online November 25, 2019]. Consultant360.

A 5-year-old girl presented with a 3-day history of a blister on her right thumb. She denied any discharge, trauma, insect bite, and fever. She had no known sick contacts, but she had experienced a similar lesion on her thumb 3 months ago, which had resolved.

Physical examination revealed a bulla on the dorsal aspect of the right thumb with surrounding erythema (**Figure**). She received a diagnosis of bullous impetigo and was advised to use warm compresses a few times a day and to apply topical mupirocin cream, 2%, twice daily.



Discussion. Impetigo is estimated to affect approximately 162 million children worldwide, predominantly in resource-poor communities.¹ The highest burden occurs in underprivileged children from impoverished communities in high-income countries.¹ Impetigo, along with skin abscess, cellulitis, and erysipelas, are common bacterial skin and soft tissue infections (SSTIs) in children, especially those between 2 and 5 years of age.^{2,3}

Impetigo is a contagious skin infection that affects the superficial epidermis and is the most common bacterial skin infection among pediatric patients.⁴ The 2 forms of impetigo are bullous and nonbullous impetigo. Nonbullous impetigo is the most common form, and in most cases (70%) *Staphylococcus aureus* is the culprit; *Streptococcus pyogenes* causes the rest.^{2,4} Nonbullous impetigo initially presents with pruritic, erythematous papules or vesicles that erode, forming honey-crust lesions; this is a result of an immune response to the infection.^{2,3,5} On the other hand, bullous impetigo is caused by *S aureus* and presents with nonpruritic, edematous bullae that are a direct result of the staphylococcal toxin.^{2,5,6}

With the increasing rates of community methicillin-resistant *S aureus* (MRSA) infections, a common bacterial cause of SSTIs, updated knowledge and strategies to combat these infections are imperative.⁷ Approximately 72% of *S aureus* isolates are methicillin-resistant, with patients younger than 18 being colonized the most.⁸ The diagnosis of bacterial SSTIs such as bullous impetigo is usually based on clinical presentation. However, a culture can be obtained if MRSA is suspected.⁴ The differential diagnosis includes bullous erythema multiforme, bullous fixed drug eruption, and bullous pemphigoid reactions (**Table**).⁹

Table. Differential Diagnosis of Bullous Impetigo

Diagnosis	Cause
Bullous impetigo	Infective; commonly <i>S aureus</i>
Erythema multiforme	Unknown; thought to be reaction response to medications (50%), infections (eg, herpes simplex virus, <i>Mycoplasma pneumoniae</i>), or illness
Bullous fixed drug eruption	Prescription medication, over-the-counter medication, nutritional supplements, and rarely foods (eg, fruits, nuts)
Bullous pemphigoid reaction	Autoimmune condition; rare and chronic
Herpetic whitlow	Herpes simplex virus type 1
Blistering distal dactylitis	Group A β -hemolytic <i>Streptococcus</i>

Treatment options for impetigo include topical and oral antibiotics, as well as topical disinfectants.⁹ Topical antibiotics are preferred for localized lesions because they allow the use of high doses with minimal systemic side effects.² One meta-analysis suggested that mupirocin, fusidic acid (not approved in the United States), and retapamulin are the most effective.^{2,9-11} Data are limited on the topical use of bacitracin, erythromycin, neomycin, and rifampin, and they are not recommended.² Retapamulin was developed to address the emerging resistance to mupirocin and fusidic acid, with overall resistance to mupirocin reported as high as 31.3% in *S aureus* isolates.¹² However, retapamulin is not approved by the US Food and Drug Administration for the treatment of MRSA skin infections.²

The duration of treatment with topical antibiotics depends on the antibiotic chosen, but a 7-day course is usually effective.^{2,10} Common adverse effects include contact dermatitis and antibiotic resistance.² Newer topical antibiotics such as minocycline foam, *N,N*-dichloro-2,2-dimethyltaurine (NVC-422) topical gel, and LTX-109 gel are being developed to address increasing bacterial resistance.² These antibiotics are still in phase 2 randomized controlled trials but offer promising options in the treatment of impetigo.^{2,11} Systemic antibiotics may be needed for more-extensive infections and in cases of failure of topical therapy. The choice of an oral antibiotic is driven by both the severity of the disease and resistance patterns in the local community.²

Our patient had the classic signs of bullous impetigo with a nonpruritic edematous, bulla. In addition to antibiotic treatment, patients need to be educated on the contagious nature of the infection.

REFERENCES:

1. Bowen AC, Mahé A, Hay RJ, et al. The global epidemiology of impetigo: a systematic review of the population prevalence of impetigo and pyoderma. *PLoS One*. 2015;10(8):e0136789. doi:10.1371/journal.pone.0136789
2. Galli L, Venturini E, Bassi A, et al; Italian Pediatric Infectious Diseases Society, Italian Pediatric Dermatology Society. Common community-acquired bacterial skin and soft-tissue infections in children: an intersociety consensus on impetigo, abscess, and cellulitis treatment. *Clin Ther*. 2019;41(3):532-551.e17. doi:10.1016/j.clinthera.2019.01.010
3. Bangert S, Levy M, Hebert AA. Bacterial resistance and impetigo treatment trends: a review. *Pediatr Dermatol*. 2012;29(3):243-248. doi:10.1111/j.1525-1470.2011.01700.x
4. Cole C, Gazewood J. Diagnosis and treatment of impetigo. *Am Fam Physician*. 2007;75(6):859-86
5. Hirschmann JV. Impetigo: etiology and therapy. *Curr Clin Top Infect Dis*. 2002;22:42-51.
6. Shi D, Higuchi W, Takano T, et al. Bullous impetigo in children infected with methicillin-resistant *Staphylococcus aureus* alone or in combination with methicillin-susceptible *S. aureus*: analysis of genetic characteristics, including assessment of exfoliative toxin gene carriage. *J Clin Microbiol*. 2011;49(5):1972-1974. doi:10.1128/JCM.01742-10
7. Zaoutis TE. Rates of serious MRSA infections in children increased about 10% per year since 2005. *AAP News*. 2013;34(12):22. 10.1542/aapnews.20133412-22
8. Garoy EY, Gebreab YB, Achila OO, et al. Methicillin-resistant *Staphylococcus aureus* (MRSA): prevalence and antimicrobial sensitivity pattern among patients—a multicenter study in Asmara, Eritrea. *Can J Infect Dis Med Microbiol*. 2019;2019:8321834. doi:10.1155/2019/8321834
9. Hartman-Adams H, Banvard C, Juckett G. Impetigo: diagnosis and treatment. *Am Fam Physician*. 2014;90(4):229-235.
10. Koning S, van der Sande R, Verhagen AP, et al. Interventions for impetigo. *Cochrane Database Syst Rev*. 2012;1:CD003261. doi:1002/14651858.CD003261.pub3
11. Chamny S, Miron D, Lumelsky N, et al. Topical minocycline foam for the treatment of impetigo in children: results of a randomized, double-blind, phase 2 study. *J Drugs Dermatol*. 2016;15(10):1238-1243.
12. Antonov NK, Garzon MC, Morel KD, Whittier S, Planet PJ, Lauren CT. High prevalence of mupirocin resistance in *Staphylococcus aureus* isolates from a pediatric population. *Antimicrob Agents Chemother*. 2015;59(6):3350-3356. doi:10.1128/AAC.00079-15