

# Community-Acquired Methicillin-Resistant *Staphylococcus Aureus* Skin Infection Presenting as a Periumbilical Folliculitis

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*Community-acquired methicillin-resistant Staphylococcus aureus (CAMRSA) infection is a clinical problem of increasing global incidence. CAMRSA most commonly presents as abscess and cellulitis of the skin and soft tissue. However, the lesions of cutaneous CAMRSA infection are pleomorphic and may appear as erythematous pustules of superficial folliculitis. This report presents the cases of 2 patients with CAMRSA skin infection that presented as a superficial folliculitis. The distribution of CAMRSA-related, erythematous, folliculocentric pustules was periumbilical, in contrast to the lesional location of methicillin-susceptible S aureus (MSSA)-associated folliculitis, which typically appears on the axillae, bearded area, buttocks, and extremities. CAMRSA should be considered in the diagnosis of periumbilical folliculitis or superficial folliculitis arising in areas not typically affected by MSSA-related folliculitis, such as the chest, flanks, and scrotum.*

*Cutis.* 2006;77:229-231.

The emergence of community-acquired methicillin-resistant *Staphylococcus aureus* (CAMRSA) infection is a clinical problem of increasing global incidence.<sup>1-5</sup> Resistance to methicillin results from a protein that is encoded by the *mecA* gene, which is located on genetic elements called staphylococcal chromosomal cassettes (SCC*mec*).<sup>4,7</sup> Nosocomial methicillin-resistant *S aureus* (MRSA) strains carry types I, II, and III SCC*mec* cassettes.<sup>1,3,6,8,9</sup> In contrast, the bacterial isolates of CAMRSA are genetically distinct; they

not only have a type IV SCC*mec* cassette (which is a novel, smaller allelic form of the methicillin-resistant locus) but also contain the Panton-Valentine leukocidin locus.<sup>1,3,5-9</sup> The Panton-Valentine leukocidin determinant encodes a virulence factor (leukocyte-killing toxin) that has been associated with skin and soft tissue infections, as well as severe necrotizing pneumonia.<sup>5,7,9</sup>

CAMRSA most commonly presents as skin and soft tissue infections.<sup>1,6-12</sup> Abscess and cellulitis are the most common forms of CAMRSA skin infection.<sup>1,3,12-15</sup> However, the clinical appearance of cutaneous CAMRSA infections is pleomorphic and includes erythematous papules, nodules, pustules, and crusted plaques.<sup>1-3,11,13</sup>

Bacterial folliculitis is an infection that can involve either the superficial or deep portion of the hair follicle.<sup>16</sup> Cutaneous CAMRSA infection can appear as superficial folliculitis, though this is an infrequent presentation.<sup>13</sup> Two cases of CAMRSA skin infection presenting as periumbilical superficial folliculitis are reported, and the characteristics of previously described cases of CAMRSA folliculitis are summarized.

## Case Reports

**Patient 1**—A healthy 24-year-old white man with no MRSA-associated risk factors was concerned about “ingrown hairs” and “red bumps” on his abdomen. The involved area had been waxed to remove the hair twice previously: 10 weeks and 2 weeks earlier. He presented with multiple erythematous, follicularly distributed papules that were predominantly periumbilical and extended inferiorly and superiorly on his abdomen toward his suprapubic region and his lower chest (Figure). He had already been treated with cephalexin 500 mg twice daily for 10 days with minimal improvement.

A sample from a periumbilical papule was obtained for bacterial culture. Systemic antibiotic therapy with cephalexin 500 mg twice daily was

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Accepted for publication March 2, 2005.

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The author reports no conflict of interest.

Reprints not available from the author.

Superficial folliculitis with culture-confirmed, community-acquired methicillin-resistant *Staphylococcus aureus*, which appears as erythematous, folliculocentric papules and pustules in the periumbilical region and the adjacent abdomen of a 24-year-old white man (patient 1).



reinstated. Topical treatment also was started; this treatment included washing with povidone-iodine 10% cleanser in the shower for 5 minutes each day and applying mupirocin 2% ointment 3 times each day to the nostrils and skin lesions.

At the follow-up visit one week later, new but similar periumbilical skin lesions were apparent, and the existing follicular papules on the patient's abdomen had either persisted unchanged or had become more inflamed. The bacterial culture was positive for MRSA. Systemic antibacterial treatment was changed to double-strength trimethoprim-sulfamethoxazole (an antibiotic to which the patient's *S aureus* isolate was susceptible) twice daily for 14 days, and the topical therapy was continued. The skin lesions began to improve and resolved completely within the next 2 weeks. Thereafter, application of the mupirocin 2% ointment was discontinued, and the use of the povidone-iodine 10% cleanser was tapered over 6 months, then discontinued.

**Patient 2**—A healthy 21-year-old black woman without MRSA-associated risk factors initially noticed some pruritic red papules within and immediately adjacent to her umbilicus. New lesions, extending centripetally from her umbilicus, continued to appear over the next 3 days. Some of the earlier lesions had flattened and darkened.

Findings of the cutaneous examination included multiple, periumbilical, follicular-based, erythematous pustules on the patient's abdomen. Hyperpigmented papules and macules also were noted surrounding her umbilicus. In addition, a sterling silver ornament was present within her umbilicus and perforating the skin above her umbilicus. Her

abdomen had been pierced for cosmetic purposes without any subsequent adverse sequelae more than one year earlier.

A sample from a periumbilical pustule was submitted for bacterial culture. Systemic antibiotic therapy using cephalexin 500 mg twice daily was initiated. Topical triamcinolone acetonide 0.1% cream was applied to the lesional area for 5 days in an attempt to ameliorate her pruritus.

New periumbilical pustules continued to develop during the next 7 days. Results of the bacterial culture demonstrated heavy growth of MRSA, which was susceptible to trimethoprim-sulfamethoxazole. The antibiotic regimen was changed to the double-strength dose of trimethoprim-sulfamethoxazole twice daily for 10 days. In addition, topical mupirocin 2% ointment was applied thrice daily for 10 days to the patient's skin lesions and nostrils. Subsequently, all of her pustular skin lesions cleared.<sup>13</sup>

### Comment

CAMRSA skin infection continues to be reported in several areas in the United States and in many nations throughout the world.<sup>1-5,7,9,11</sup> The bacterial strains responsible for the CAMRSA infections may be endemic in these cities and countries.<sup>3,10,12</sup> Indeed, it has even been suggested that the increased incidence of cutaneous CAMRSA infection represents an emerging epidemic.<sup>3</sup>

Cutaneous CAMRSA infection often presents as abscess and cellulitis.<sup>1,3,12-15</sup> In contrast, superficial bacterial folliculitis, which is most commonly caused by methicillin-susceptible *S aureus* (MSSA), usually presents as multiple, erythematous,

folliculocentric pustules on the scalp in children or on the bearded area, arms, legs, axillae, and buttocks in adults.<sup>16</sup> The abdomen, and particularly the periumbilical region, is not a typical location for MSSA-associated folliculitis.<sup>16</sup>

Both patients discussed in this report presented with CAMRSA-associated folliculitis. Their infectious lesions were characterized by superficial folliculocentric pustules that initially appeared in the periumbilical region. Subsequently, new lesions developed in the same area and spread centrifugally toward the adjacent abdomen.

CAMRSA-related folliculitis also has been observed in other patients.<sup>2,13,17</sup> Superficial folliculitis of the chest and flanks was one of the cutaneous morphologies of a recurrent CAMRSA skin infection in a 24-year-old white man.<sup>13</sup> CAMRSA-associated folliculitis also was described in a 13-year-old boy in whom MRSA presented as lesions described as a pustular rash on both lower legs, left forearm, and scrotum.<sup>17</sup> Therefore, in some of individuals, the inflammatory pustules appeared at body sites that are not usually affected by MSSA, such as the chest, flanks, and scrotum.<sup>13,17</sup>

## Conclusion

The observations from these case reports demonstrate that cutaneous CAMRSA infection can present as folliculocentric pustules and papules, though less commonly than its typical presentation. The findings also show that the distribution of CAMRSA-associated superficial folliculitis is often unique—the lesions may be found in the periumbilical region or in areas that are not typically affected by MSSA-related folliculitis, such as the chest, flanks, and scrotum. Therefore, CAMRSA should be entertained as the potential pathogenic bacteria in patients with periumbilical folliculitis or superficial folliculitis in a location that is not characteristic of MSSA.

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