Community meticiline resistant *Staphylococcus* aureus skin infection in a family setting

Cecilia Lamas[1], Jorge Tiscornia[2], Wanda Cornistein[3], Mariana Arias[4], Alejandra Abeldaño[5]

ABSTRACT

Staphylococcus aureus is a pathogen responsible for infections of variable severity both in children and adults. Its prevalence is high (about 28.4 cases per 100.000 persons). Nowadays this pathogen cause severe skin and soft tissue infections in the community setting. Nevertheless its features are different and has been denominated community acquired meticiline resistant *S. aureus* (CA-SAMR). In our country this pathogen is under diagnosed. We describe a family with multiple episodes of recidivate skin infections which were treated empirically and without success. The clinical feature was the presence of eritemathous nodules, some of them ulcerated and necrotic, in diff erent sites. CA-SAMR was isolated in all patients. Nasal samples were negative in all family members. They were treated with trimetoprim sulfamethoxazol 800/160 mg each 12 hours and clindamicine 300 each 6 hours for 14 days with complete cure of the lesions. (Dermatol Argent 2010;16(2):126-128).

Key words:

methicillin-resistant Staphylococcus aureus, community-acquired, infections, familiar outbreak.

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Introduction

Staphylococcus aureus is a pathogen that causes infections of diverse severity in children and adults. Its frequency is high (estimated around 28.4 cases per 100,000 persons). In recent years, it has reemerged as a pathogen of severe infections of skin and soft tissue in patients in the community, but with different genotypic and phenotypic characteristics, so it is referred to as Community-Acquired Methicillin-Resistant S. Aureus (CAMRSA).

In Latin America there have been reports in children from Uruguay and adult patients from Brazil. In our country, a one year study, reported more than 30 cases in pediatric patients, showing a 38% of incidence.1.2 1st generation cephalosporins, which until recently were the first choice for treatment of skin infections and soft tissue, are currently under review. We present a family who for a period of 1 year consulted for multiple episodes of recurrent skin infections and were treated with empirical antibiotic schemes without microbiological isolation and treatment failure.

[1] 1st year MD of the specialized course of the SAD

[2] Attending physician, Dermatology Unit

[3] MD specialized on infectious diseases. Infectious Diseases Section

[4] Attending physician, Dermatology Unit

[5] Head of Dermatology Unit

Dermatology and Infectious Diseases Unit, Acute General Hospital "Dr. Cosme Argerich". CABA, Argentina.

Corresponding Author:Dra. Cecilia Lamas: Mitre 2239, (1611) Don Torcuato, Tigre, Buenos Aires, Rep. Argentina.

celamas@hotmail.com

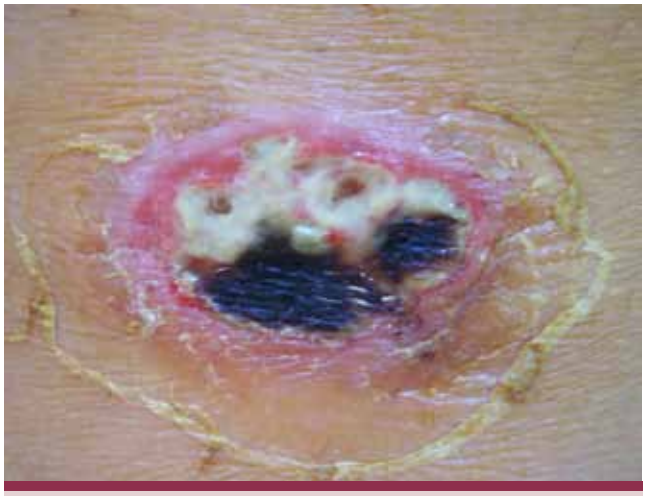

PHOTO 1. Abscess with central necrosis, cellulitis, peripheral and spontaneous secretion located on the posterior thigh.

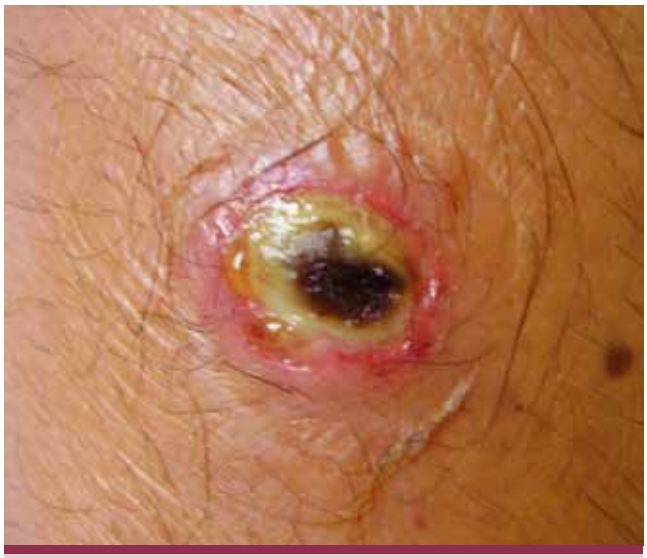

PHOTO 2. Boil with necrotic core, peripheral erythema and local temperature rise located on left forearm.

Series of cases

Case 1

Female patient aged 35, who consulted for a single lesion located on her left posterior thigh. Referred that 3 months before showed a similar injury in the same location, which then decided to self-medicate with cephalexin 500 mg every 8 hours for 10 days. The injury, after 7 days, progressed with increasing size, edema and pain. She then consulted another health center, where she was prescribed amoxicillin-clavulanate 1 g every 8 hours, but treatment showed no improvement. Personal history. Taking oral contraceptives. Had 2 pregnancies and 2 caesarean operations. Physical examination. Abscess with central necrosis, peripheral cellulitis and spontaneous secretion of 8 × 5 cm in diameter located on the back of her left thigh **(Photo 1)**.

Case 2

Patient aged 34, husband of the patient in case 1. Presented a boil which appeared a week before on his left forearm, and which over several consultations evolved with central ulceration and spontaneous secretion. He reported over the past 6 months he had presented several other injuries with the same characteristics on the thighs, lumbar region, scrotum and eyelids, which were treated with cephalexin and amoxicillin-clavulanate. Personal history. No comments. Physical examination. Boil of 3×3 cm in diameter, with necrotic core, peripheral erythema and increased local temperature **(Photo 2).**

Case 3

Patient of 7 years old, daughter of the above mentioned patients, which 1 year ago presented erythematous plaques with pustules located on its surface, located on the scalp and neck and were partially resolved with cephalexin. During this year developed recurrent boils located on the trunk, neck and limbs, which did not respond to treatments with standard antibiotics. Personal history. No comments. Physical examination. Erythematosus boil of 1×2 cm on the back of the trunk.

Given the suggestive epidemiology of CAMRSA, the Department of Infectious Diseases was consulted. The joint decision was to perform sampling by needle aspiration of healthy skin adjacent to the lesion of all 3 patients for bacterial and mycological culture. Laboratory analyses were requested, with results within normal parameters, and antibiotic treatment was started using ciprofloxacin 500 mg every 12 hours and clindamycin 300 mg every 6 hours, resulting on an improvement of lesions within the following 48 hours.

Cultures: Staphylococcus aureus.

Anti-biogramme: resistant to oxacillin and erythromycin, sensitive to trimethoprim / sulfamethoxazole (TMS-SMX), aminoglycosides, rifampin, minocycline, vancomycin, ciprofloxacin oxacin, clindamycin, linezolid and teicoplamina.

Nasal swabs were performed to all 3 family members with negative results.

After culture results, 14 days of treatment were completed with TMS-SMX 800/160 mg every 12 hours and clindamycin 300 mg every 6 hours, resulting on the healing of all lesions.

Comments

The appearance of infections caused by CAMRSA is a public health issue of magnitude, located on different regions of the planet.[3] Infection can occur through direct contact with infected patients, colonized patients or contaminated

environments. There have been cases of domestic infection with MRSA and closed communities.[4] Unlike nosocomial MRSA, most CAMRSA present the gene for Panton Valentine Leukocidin (PVL) and the MecA gene that is located on chromosome cassette SCCmec IV.[2,5] This gives resistance to oxacillin and thus to all β-lactams but retains sensitivity to other antibiotics, as in the cases presented above. These strains are associated with tissue necrosis and abscess formation, but it is unclear whether these effects are mediated by PVL.

Injuries caused by MRSA may vary from impetigo to necrotizing fasciitis. The most common are abscesses (50-75%) and cellulitis (25-50%). They are usually single lesions and presented on a limb. Abscesses are often presented with central necrosis and peripheral cellulite as seen in case 1. Boils are characteristic, usually of multiple appearances and are presented in outbreaks as observed on cases 2 and 3.

Systemic involvement is variable. Fever and leukocytosis may be absent. Recurrence is common, and the need for hospitalization varies between 16 to 44%. The prognosis is generally very accurate.[4]

Treatment consists of surgical drainage and the use of an effective antibiotic. Surgical drainage is essential on this kind of infections; it is crucial for the healing of the boils and large abscesses. Patients with abscesses are usually cured with drainage only.[4-6] Lesions larger than 5 cm diameter would be statistical indicators for hospitalization, while the incision and drainage of abscesses smaller than 5 cm would be effective enough for their management.[7]

In case 1, the drainage occurred spontaneously, whereas in cases 2 and 3 lesions were of medium and small size and responded quickly to antibiotic treatment without requiring drainage.

Antibiotic therapy increases the recovery rate from 87% to 95%,[4] especially in patients with large abscesses and cellulitis. In regions where the isolation of CAMRSA exceeds 10-15%, first-generation cephalosporins are not recommended as initial empiric therapy for infections of skin and soft tissue.[8] Vancomycin remains the drug of choice for patients with complicated skin and soft tissue infections by CAMRSA, because of its low cost and high cure rate (69-90%). Treatment with linezolid, although it can trigger myelosuppression, has the advantage of oral or intravenous administration (IV) and a cure rate between 79 and 92%.[5]

Other treatment options are tigecycline (IV) and daptomycin (IV), recently approved by the ADF for skin and soft tissue infections caused by CAMRSA.[4,5]

Although no controlled and randomized studies have been conducted, to support its use in healthy patients with uncomplicated infections it has been empirically suggested the use of TMSSMX, tetracyclines (doxycycline and minocycline), quinolones and clindamycin.[4-7] Rifampicin is also alternatively used combined with other antibiotics to avoid generate bacterial resistance.[4-7]

The period of treatment is not well established but it is considered that 14 days are sufficient, especially in patients with clinical improvement during the first 48 hours.

As for the decolonization of MRSA-infected patients (eg., nasal mupirocin and body baths with chlorhexidine), there is no conclusive evidence to endorse this practice, since colonization is frequently absent on infected patients.[4,5] In our case it was not necessary because the whole family had negative nasal cultures. A panel of experts suggested decolonization only for specific situations, such as patients with multiple and recurrent MRSA infections and progression of the infection amongst cohabitants.[4]

In conclusion, we report a CAMRSA skin infection on a family unit located in Argentina. We would like to emphasize that in our country it is an emerging pathogen and under diagnose that should be suspected at the time of diagnosis in daily consults. It should be remembered that it is essential the rational use of antibiotics to prevent the emergence of antimicrobial resistance. It is therefore necessary to perform proper culture and anti-biogrammme studies to indicate the appropriate initial antimicrobial treatment; in this way it can be avoided as well as the progression of more severe infections and the emergence of new cases in the community.

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