

Staphylococcus lugdunensis: An Emerging Pathogen in Skin and Soft Tissue Infections[☆]



Staphylococcus lugdunensis: un patógeno emergente en infecciones de piel y partes blandas

To the Editor:

Staphylococcus lugdunensis belongs to the group of coagulase negative staphylococci (CoNS) that are members of the skin microbiota. In contrast to the other CoNS, *S. lugdunensis* presents microbiological characteristics associated with a high level of virulence and a capacity to produce suppurative infections, in both healthy and immunodepressed individuals.¹ An increase in the incidence of community acquired infections has been reported in recent years, with the skin and subcutaneous cellular tissue being the main targets.

We present 2 cases of pyoderma in which *S. lugdunensis* was isolated as the causative agent.

The first patient was a 59-year-old man with type 2 diabetes. He consulted for a lesion that had arisen on the left thigh several weeks earlier and that he attributed to an insect bite. He did not report fever. Examination revealed a violaceous nodule of 2 cm diameter with a central orifice through which purulent material was draining. The lesion was clinically compatible with an abscess (Fig. 1). Surgical drainage was performed and samples were taken for microbiological analysis. Home treatment consisted of the application of fusidic acid cream twice a day after wound cleansing. The lesion healed in a week. *S. lugdunensis* was isolated from the culture (identification by MicroScan); the organism was sensitive to ampicillin, oxacillin, and to the other antibiotics tested (gentamycin, erythromycin, clindamycin, vancomycin, rifampicin, fosfomicin, trimethoprim-sulfamethoxazole, ciprofloxacin, norfloxacin, and daptomycin; antimicrobial sensitivity assay: broth microdilution).

The second patient was a woman aged 42 years with no past medical history of interest. She consulted for a painful lesion that had arisen a month earlier on the sole of the right foot. She did not recall any injury, but there had been superficial manipulation by a podologist before the discomfort started. On examination, a whitish plaque was observed that did not disrupt the dermatoglyphs. Curettage of the hyperkeratotic component revealed an abscessified cavity. Surgical lavage was performed and samples were sent for microbiology culture, from which *S. lugdunensis* (MicroScan) was isolated, showing an antimicrobial sensitivity pattern identical to that of the previous case. Antibiotic treatment was initiated with amoxicillin/clavulanic acid 875 mg/125 mg every 8 hours and 2% mupirocin cream twice a day for a week, with a satisfactory clinical course.



Figure 1 A fluctuating violaceous nodule on the left thigh.

The growth of CoNS in skin cultures can typically be explained by its presence as a commensal organism. However, some species are associated with a higher risk of developing suppurative infections. In recent years, *S. lugdunensis* has been shown to be one of the main CoNS with pathogenic potential. It was first described by Freney et al. in 1988. The term *lugdunensis* derives from the city where the organism was first isolated: Lugdunum, the Latin name for Lyon, France.

This staphylococcus has been described by some authors as a wolf in a lamb's skin² because of its high virulence and its ability to act as a pathogenic organism, in contrast to other CoNS.

Although it can affect healthy individuals, the risk is higher in patients with diabetes mellitus, kidney failure, or malignant disease, and in those on immunosuppressant treatment. Trauma or a solution of continuity after surgery are the main pathological states associated with infection by this microorganism.^{3,4}

As a colonizing organism, *S. lugdunum* is found in areas rich in apocrine sweat glands, such as the inguinoperineal and periareolar regions,⁵ although it can also be isolated from the nares of healthy individuals.

Clinical infection typically presents as skin and soft tissue infection in the form of a subcutaneous abscess. Nonpuerperal mastitis—often recurrent—warrants special mention.⁶ Bone and joint infection can arise by contiguous spread, highlighting the pathogenic potential of this staphylococcus. Less commonly, it has been associated with infections of the central nervous system⁷ or urinary tract and with endocarditis.⁸

Its high virulence compared with other CoNS is due to a number of characteristics: the formation of a biofilm (it is also an emerging pathogen in prosthesis-related infections), production of adherence proteins, resistance to high concentrations of lysozyme, and production of heat-stable hemolysin.^{2,9} However, it does not produce Pantone-Valentine

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leukocidin, the toxin responsible for the virulence of some strains of *Staphylococcus aureus*.

In contrast to other SCoN, *S. lugdunensis* presents an excellent sensitivity profile to a number of families of antimicrobials, including the penicillins, which makes control easier. Despite this, cases of methicillin resistance have already been reported.¹⁰

It should be noted that the rate of error of identification in automated instruments is not insignificant, meaning that the frequency of infection may be underestimated.

The growing interest in this bacterium in dermatology is based not only on its elevated capacity to cause skin and soft tissue infections, but also on the correct interpretation of the culture, in order to recognize it as a pathogenic organism and not rule it out as a skin commensal.

References

1. Frank KL, del Pozo JL, Patel R. From clinical microbiology to infection pathogenesis: how daring to be different works for *Staphylococcus lugdunensis*. *Clin Microbiol Rev*. 2008; 21:111–33.
2. Cercenado E. *Staphylococcus lugdunensis*: un estafilococo coagulasa negativo diferente de los demás. *Enferm Infecc Microbiol Clin*. 2009;27:139–42.
3. Papapetropoulos N, Papapetropoulou M, Vantarakis A. Abscesses and wound infections due to *Staphylococcus lugdunensis*: report of 16 cases. *Infection*. 2013;41:525–8.
4. Arias M, Tena D, Apellániz M, Asensio MP, Caballero P, Hernández C, et al. Skin and soft tissue infections caused by *Staphylococcus lugdunensis*: report of 20 cases. *Scand J Infect Dis*. 2010;42:879–84.
5. Böcher S, Tønning B, Skov RL, Prag J. *Staphylococcus lugdunensis*, a common cause of skin and soft tissue infections in the community. *J Clin Microbiol*. 2009;47:946–50.
6. Kleiner E, Monk AB, Archer GL, Forbes BA. Clinical significance of *Staphylococcus lugdunensis* isolated from routine cultures. *Clin Infect Dis*. 2010;51:801–3.
7. Klotchko A, Wallace MR, Licitra C, Sieger B. *Staphylococcus lugdunensis*: an emerging pathogen. *South Med J*. 2011; 104:509–14.
8. Sabe MA, Shrestha NK, Gordon S, Menon V. *Staphylococcus lugdunensis*: a rare but destructive cause of coagulase-negative staphylococcus infective endocarditis. *Eur Heart J Acute Cardiovasc Care*. 2014;3:275–80.
9. Fariña N, Carpinelli L, Samudio M, Guillén R, Laspina F, Sanabria R, et al. Clinically significant coagulase-negative staphylococci: most frequent species and virulence factors. *Rev Chilena Infectol*. 2013;30:480–8.
10. Tee WS, Soh SY, Lin R, Loo LH. *Staphylococcus lugdunensis* carrying the *mecA* gene causes catheter-associated blood stream infection in premature neonate. *J Clin Microbiol*. 2003; 41:519–20.

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Prenatal Screening for Bathing-suit Ichthyosis After Diagnosis in an Older Sibling[☆]



Ictiosis en bañador y diagnóstico prenatal en subsiguiente embarazo

Bathing suit ichthyosis (BSI) is a rare form of ichthyosis in the group of autosomal recessive congenital ichthyoses (ARCI), together with lamellar ichthyosis (LI), congenital ichthyosiform erythroderma (CIE), harlequin ichthyosis, and self-healing collodion baby (SHCB). These in turn form part of the nonsyndromic ichthyoses,^{1,2} and their estimated prevalence in Spain is of 7.2 cases per million population, with a total of 144 cases reported. Among these, only 2 cases of BSI have been documented, 1.4% of all cases of ARCI.³ BSI was first described as a distinct disease in 2005⁴ and it is characterized by presentation at birth as collodion baby; the characteristic distribution typically develops within a few months, with the appearance of thick brownish scales on the trunk, with sparing of the limbs and face, giving the appearance of a woman's bathing suit.^{2,5} This

condition is due to mutations in the *TGM-1* gene,^{1,2,5–8} which provoke a phenotype similar to LI but milder; the distribution depends on body temperature, as the function of the enzyme transglutaminase-1 is only altered in the warmest areas of the body, typically the central regions.⁸

We presented the case of a 6-year-old girl of Spanish origin, with no family history of interest and no known consanguinity, product of a well-controlled second gestation. At birth the condition presented as collodion baby. This resolved without complications, but when the infant was 6 months old, thick brownish scales started to develop in a specific distribution, only affecting the inguinal and axillary regions (Figs. 1 and 2) and the central area of the trunk, with sparing of the face, limbs, hands, and feet. Diffuse desquamation and erythema of the scalp were also observed. Notably, there was no involvement of the nails or hair, no alteration of sweating, and no other signs of systemic involvement, nor was any deficit detected in the child's psychomotor development. On suspicion of BSI, we decided to perform genetic analysis, which confirmed the suspected diagnosis after finding 2 known pathogenic mutations in heterozygosis, in both alleles of the *TGM-1* gene: c.424C > T; p.Arg142Cys described in BSI⁸ and c.919C > G; p.Arg307Gly described in LI.⁹

The patient's clinical course has at all times been characteristic of the disease (chronic and recurrent), and the manifestations have been managed using moisturizers and

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