Role of *Staphylococcus lugdunensis* in hidradenitis suppurativa

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Background

Staphylococcus lugdunensis is an unusually coagulase negative staphylococci (CoNS) that belongs to the skin microbiota. As a colonizing organism, *S. lugdunensis* is found in areas rich in apocrine sweat glands, such as the inguinoperineal and periareolar regions. Recently, it has been implicated in skin and soft tissue infections (SSTI) in both healthy and immunosuppressed individuals.
S. lugdunensis presents microbiological characteristics associated with a high level of virulence and a capacity to produce suppurative infections, in contrast to other CoNS. It 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.
Recently, its presence in lesions of hidradenitis suppurativa (HS) has been highlighted and described as a predominant isolate in at least 58 percent of HS abscesses and nodules.

Objectives

The aim of the present study was to investigate the clinical and microbiological characteristics of the cutaneous and soft tissue infections (SSTIs) caused by *S. lugdunensis* and its relation with HS.

Patients and methods

Table 1

- Retrospective revision of the clinical charts of all cases of SSTI due to *S. lugdunensis* from 2010 until 2017
- Data:
  - Age, Sex, Underlying disease, Predisposing factors
  - Immunosupression
  - Clinical Presentation and Location
  - Source of the isolate
  - Treatment and Outcome
  - If HS was present, time of evolution, Hurley stage.

Results

We report 23 cases of SSTIs where *S. lugdunensis* was isolated during a period of 7 years (2010-2017). The characteristics of the patients are detailed in Table 2 and 3. Nine patients (39,1%) were also diagnosed of HS. Abscesses were the most likely clinical diagnose that led to the performance of the culture; more frequently among HS patients (88,8% vs 14.2%). Location of the lesions varied, but were more commonly infraumbilical, especially among HS patients (88,8% vs 14.2%) (See Table 4). *S. lugdunensis* was the unique isolated pathogen from 19 of the 23 specimens (82,6%). In 8 cases the antibiogram showed resistance to some antibiotic, 3 cases to penicillin, 2 to clindamycin and erythromycin, 1 to tetracycline, 1 to fosfomycin and in **1 case was meticillin-resistant**, with no differences among HS and no- HS patients. The majority of patients were treated with oral and topical antibiotics and all but one patient were cured after antibiotic therapy, associated or not with surgical drainage. Among HS patients, the disease was classified as mild in 3 cases (33.3%) and moderate in 6 cases (66.6%), following Hurley grading system. Six patients referred a long lasting disease (more than 10 years) whereas 2 patients a less than one-year old disease.

Table 2: Characteristics of the patients included

23 cases

Men: 15 (65.2%)

Mean Age: 44 (20 -72)

Immunosupression: 4 (17.3%)

Golimumab (anti-TNF): 1

Oral prednisone: 1

HIV: 2

Other risk factors (diabetes, renal impairment): 0

Predisposing factors:

Surgery: 0

Trauma: **1** (depilation)

Dermatological disease

Hidradenitis supurativa: 9 (39.1%)

Table 3: Clinical characteristics of the SSTI infections caused by *S. lugdunensis*

Purulent lesions: 19/23 (82.6%)	
Abscesses	**10 (43.4%)**
Pustules	**9 (39.1%)**
(Foliculitis/Forunculosis)	
Erosive plaques	2 (8.6%)
Erythematous plaques	1 (4.3 %)
Others	1 (4,3%)

Localization	
Thighs	**5 (20.8%)**
Inguinal fold and perineal area	**5 (20.8%)**
Buttocks	**3 (12.5%)**
Trunk	3 (12.5%)
Head	2 (11.8%)
Breast	1 (8.3%)
Arm	1 (8.3%)

HS patients	9
Hurley	
I	2
II	5
III	0
Unknown	2
> 5 year old disease	5

Table 4: Characteristics of HS patients

	Patients with HS	Patients without HS
N	9	14
Male	4/9 (44.4%)	11/14 (78.5%)
Mean age	41.5	48.7
Groin	8/9 (88,8%)	10/14 (71.4%)
Abscess	8/9 (88,8%)	10/14 (71.4%)
Unique germ	8/9 (88,8%)	10/14 (71.4%)
Resistance	3/9 (33.3%)	5/14 (35,7%)

Conclusion

S. lugdunensis, which has previously been regarded as commensal bacterium, may have a pathogenic role in SSTIs, and especially in HS. It affects equally men and women; more commonly with moderate long-lasting disease, with abscesses located below the waist (thighs and genital area). It bears multiple antibiotic resistances which should be investigated although the skin infections usually have a good evolution with the antibiotic treatment.

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