

## Funding

No funding was required for this work.

## Conflict of interest

The authors declare no conflict of interest.

## Acknowledgments

We are grateful to Nuria Fernández Hidalgo and Joaquim Martínez-Montauti for their critical review, to Francesc Marco for the MALDITOF identification, and to Michael Maudsley for English language support and editorial assistance.

## References

- Mak TN, Schmid M, Brzuszkiewicz E, Zeng G, Meyer R, Sfanos KS, et al. Comparative genomics reveals distinct host-interacting traits of three major human-associated propionibacteria. *BMC Genomics*. 2013;14:640.
- Clayton JJ, Baig W, Reynolds GW, Sandoe JAT. Endocarditis caused by *Propionibacterium* species: a report of three cases and a review of clinical features and diagnostic difficulties. *J Med Microbiol*. 2006;55:981–7.
- Sohail MR, Gray AL, Baddour LM, Tleyjeh IM, Virk A. Infective endocarditis due to *Propionibacterium* species. *Clin Microbiol Infect*. 2009;15:387–94.
- van Valen R, de Lind van Wijngaarden RAF, Verkaik NJ, Mokhles MM, Bogers AJJC. Prosthetic valve endocarditis due to *Propionibacterium acnes*. *Interact Cardiovasc Thorac Surg*. 2016:ivw087.
- Yedidya I, Goldberg E, Sharoni R, Sagie A, Vaturi M. Infective endocarditis caused by *Propionibacterium granulosum*. *Isr Med Assoc J*. 2015;17:642–3.
- di Summa PG, Yvon A, Larcher L, Raffoul W, Koch N. *Propionibacterium avidum* infection following breast reduction: high morbidity from a low-virulence pathogen. *J Surg Case Rep*. 2015;2015:1–3.
- Vetromile F, Malfante P, Fuentes N, Bosio A. Endocarditis bacteriana por *Propionibacterium avidum*. ¿Un primer caso en la literatura? *Rev Hosp Privado Comunidad*. 2001;4:37–9.
- Braun DL, Hasse BK, Stricker J, Fehr JS. Prosthetic valve endocarditis caused by *Propionibacterium* species successfully treated with coadministered rifampin: report of two cases. *BMJ Case Rep*. 2013;2013.
- Park HJ, Na S, Park SY, Moon SM, Cho OH, Park KH, et al. Clinical significance of *Propionibacterium acnes* recovered from blood cultures: analysis of 524 episodes. *J Clin Microbiol*. 2011;49:1598–601.
- Habib G, Lancellotti P, Antunes MJ, Bongiorni MG, Casalta J-P, Del Zotti F, et al. 2015 ESC Guidelines for the management of infective endocarditis. *Eur Heart J*. 2015;36:3075–128.

Jose Loureiro-Amigo<sup>a</sup>, Silvia Pons<sup>b</sup>, Montserrat Sierra<sup>c</sup>, Yolanda Meije<sup>a,\*</sup>

<sup>a</sup> Infectious Disease Unit – Internal Medicine Department, Hospital de Barcelona, Societat Cooperativa d'Instal·lacions Assistencials Sanitàries (SCIAS), Barcelona, Spain

<sup>b</sup> Cardiology Unit, Hospital de Barcelona, SCIAS, Barcelona, Spain

<sup>c</sup> Microbiology Department, Hospital de Barcelona, SCIAS, Barcelona, Spain

\* Corresponding author.

E-mail address: [yolandameije@gmail.com](mailto:yolandameije@gmail.com) (Y. Meije).

<http://dx.doi.org/10.1016/j.eimc.2016.08.010>  
0213-005X/

© 2016 Elsevier España, S.L.U. and Sociedad Española de Enfermedades Infecciosas y Microbiología Clínica. All rights reserved.

## Unusual clinical presentations of *Actinotignum* (*Actinobaculum*) *schaalii* infection



### Presentaciones clínicas inusuales de la infección por *Actinotignum* (*Actinobaculum*) *schaalii*

*Actinotignum* (*Actinobaculum*) *schaalii* are considered commensal bacteria of the genital and urinary tract.<sup>1</sup> They have been transferred to a new genus, *Actinotignum*, along with *A. urinale* and *A. sanguinis*.<sup>2</sup>

They are frequently overlooked because of their slow growth and their difficult identification by conventional methods, and their prevalence is very likely underestimated. Newer identification methods, such as MALDI-TOF MS, have made it an emerging pathogen involved in UTIs, but also in other locations such as osteomyelitis, bacteremia and skin infections.<sup>3</sup> We describe three unusual clinical presentations of *A. schaalii* infections.

#### Case # 1

70-Years-old immunocompetent male, attending to the Emergency Room (ER) because of 48 h febricula with shaking chills, malaise and scrotal and perineal pain. Two years before, he suffered a perianal abscess, which evolved to a Fournier's gangrene with several sepsis episodes. The exploration showed a scrotal abscess which was drained. After 48 h incubation, grayish colonies growing on blood agar plates were identified as *A. schaalii* by MALDI-TOF MS (MicroFlex, Bruker Daltonik GmbH, Germany). Antibiotic susceptibility was tested by the disk diffusion method (Table 1). The patient received amoxicillin/clavulanic acid for 2 weeks, remaining asymptomatic thereafter.

#### Case # 2

43-Years-old male attending to the ER because of 1-month dysuria. Empirical treatment with ciprofloxacin led to an initial improvement with relapse within a few days. Azithromycin was then started, with no improvement. When the patient returned to the ER, he was afebrile, but he referred a purulent urethral discharge, hemospermia, hematuria and painful erection. Blood count and serum biochemistry were normal. Hematuria and pyuria, but not bacteriuria, were observed. Empirical treatment with cefixime was started, but one month later the patient had not improved. He continued with leucocyturia, so urine and urethral discharge samples were sent for culture, and empirical treatment with ciprofloxacin was started. The patient improved, and cultures were negative. Four months later the patient got back to the Urology office with hematuria and urethral discharge, but no specific pain. Prostate ultrasounds study showed prostatic parenchyma calcifications, suggesting chronic prostatitis. Urethral discharge culture was again performed, and this time *A. schaalii* was isolated and identified (MicroFlex, Bruker Daltonik GmbH, Germany). Disk diffusion susceptibility appears in Table 1. After two weeks with amoxicillin-clavulanate, urethral discharge disappeared, control urine cultures were negative, and the patient was asymptomatic.

#### Case # 3

70-Year-old woman, who attended to her primary care doctor because she had detected a 2 cm lump in her right breast areolar area. No skin or nipple retraction, galactorrhoea, or axillary

**Table 1**  
Antibiotic susceptibility of three *A. schaalii* clinical isolates.

Antibiotic	Case # 1	Case # 2	Case # 3
Penicillin	S	S	S
Amox/clav	S	S	S
Cefotaxime	S	S	S
Vancomycin	S	S	S
Teicoplanin	S	S	S
Linezolid	S	S	S
Gentamicin	S	S	S
Levofloxacin	S	I	S
Erythromycin	S	R	S
Clindamycin	R	R	R

lymphadenopathies were observed. Mammography and breast ultrasound study detected an echogenic nodule in the right breast internal retroareolar area, with no invasion signs. A fine needle aspiration was performed. Gram positive rods were observed, and grayish colonies grew on blood agar, which were identified by MALDI-TOF MS (MicroFlex, Bruker Daltonik GmbH, Germany) as *A. schaalii*. Disk diffusion susceptibility appears in Table 1. The patient was treated with amoxicillin/clavulanic acid for ten days. One month later the nodule had disappeared and the patient was asymptomatic.

Though *A. schaalii* is mainly a urinary tract pathogen<sup>4</sup>, it is being isolated from other locations with growing frequency. In a study on *A. schaalii* clinical isolates obtained between 1999 and 2009 in one hospital in Basel (Switzerland), only 30% were obtained from urine, most isolates being obtained from deep tissue infections and bacteremia. As other studies report,<sup>5</sup> most of our patients were >60 years old. *A. schaalii* infections have been associated to urologic-related predisposing conditions,<sup>3</sup> as with our patient # 2. Fournier gangrene and skin breast abscess by *A. schaalii* have also been described.<sup>6,7</sup> Very likely, *A. schaalii* has been underdiagnosed for years. *A. schaalii* is present, at high bacterial counts, in 33% of urine samples from children with unspecific fever or UTI symptoms.<sup>8</sup> Non-UTI infections by *A. schaalii* have been seldom reported in Spain.<sup>9,10</sup> MALDI-TOF MS allow a reliable identification of this microorganism,<sup>6</sup> as with our isolates.

To date, specific recommendations to perform antimicrobial susceptibility testing do not exist for *Actinotignum* spp. As a consequence of this lack of specific rules, authors have used both the E-test method and disk diffusion methods.<sup>3</sup> Here we have used the disk diffusion method on 5% blood Mueller Hinton agar, and the CLSI guidelines for streptococci. *A. schaalii* has been reported usually susceptible to  $\beta$ -lactams, excepting mecillinam, gentamicin, vancomycin, teicoplanin, tetracyclines, rifampicin, nitrofurantoin and linezolid. Is frequently resistant to macrolides (50%), clindamycin (25%) and ciprofloxacin, but usually remains susceptible to levofloxacin.<sup>3</sup> The susceptibility of our three isolates correlates with this profile, though all our isolates were clindamycin-resistant.

In conclusion, *A. schaalii* is an emerging uropathogen that is being increasingly detected as responsible for invasive infections. Microbiology laboratories shall include appropriate culture

protocols for detecting its presence in urine, but also in invasive infections. MALDI-TOF MS will be a valuable resource for its accurate identification.

## References

- Olsen AB, Andersen PK, Bank S, Soby KM, Lund L, Prag J. *Actinobaculum schaalii*, a commensal of the urogenital area. *BJU Int.* 2013;112:394–7.
- Yassin AF, Spröer C, Pukall R, Sylvester M, Siering C, Schumann P. Dissection of the genus *Actinobaculum*: reclassification of *Actinobaculum schaalii* Lawson et al., 1997 and *Actinobaculum urinale* Hall et al., 2003 as *Actinotignum schaalii* gen. nov., comb. nov. and *Actinotignum urinale* comb. nov., description of *Actinotignum sanguinis* sp. nov. and emended descriptions of the genus *Actinobaculum* and *Actinobaculum suis*; and reexamination of the culture deposited as *Actinobaculum massiliense* CCUG 47753T (=DSM 19118T), revealing that it does not represent a strain of this species. *Int J Syst Evol Microbiol.* 2015;65:615–24.
- Lotte R, Lotte L, Ruimy R. *Actinotignum schaalii* (formerly *Actinobaculum schaalii*): a newly recognized pathogen – review of the literature. *Clin Microbiol Infect.* 2016;22:28–36.
- Tuuminen T, Suomala P, Harju I. *Actinobaculum schaalii*: identification with MALDI-TOF. *New Microbes New Infect.* 2014;2:38–41.
- Tschudin-Sutter S, Frei R, Weisser M, Goldenberger D, Widmer AF. *Actinobaculum schaalii* – invasive pathogen or innocent bystander? A retrospective observational study. *BMC Infect Dis.* 2011;11:289.
- Reinhard M, Prag J, Kemp M, Andresen K, Klemmensen B, Højlyng N, Sørensen SH, Christensen JJ. Ten cases of *Actinobaculum schaalii* infection: clinical relevance, bacterial identification, and antibiotic susceptibility. *J Clin Microbiol.* 2005;43:5305–8.
- Beguelin C, Genne D, Varca A, Tritten ML, Siegrist HH, Jaton K, Lienhard R. *Actinobaculum schaalii*: clinical observation of 20 cases. *Clin Microbiol Infect.* 2011;17:1027–31.
- Andersen LB, Bank S, Hertz B, Soby KM, Prag J. *Actinobaculum schaalii*, a cause of urinary tract infections in children? *Acta Paediatr.* 2012;101:e232–4.
- Salvador M, Plasencia V, Segura C, Gómez J, Medina MJ, Sáez-Nieto JA, Castellanos S, Horcajada JP. Infection due to *Actinobaculum* spp.: report of 12 patients in Spain. *J Infect.* 2013;66:107–9.
- Tena D, Fernández C, Lago MR, Arias M, Medina MJ, Sáez Nieto JA. Skin and soft-tissue infections caused by *Actinobaculum schaalii*: report of two cases and literature review. *Anaerobe.* 2014;28:95–7.

María Siller Ruiz<sup>a,b</sup>, Sara Hernández Egado<sup>a,b</sup>,  
Noelia Calvo Sánchez<sup>a</sup>, Juan Luis Muñoz Bellido<sup>a,b,c,d,\*</sup>

<sup>a</sup> *Servicio de Microbiología, Complejo Asistencial Universitario de Salamanca, Salamanca, Spain*

<sup>b</sup> *Instituto de Investigación Biomédica de Salamanca (IBSAL-CSIC), Salamanca, Spain*

<sup>c</sup> *Unidad de Investigación Consolidada de Castilla y León UIC-079, Spain*

<sup>d</sup> *Departamento de Ciencias Biomédicas y del Diagnóstico, Universidad de Salamanca, Salamanca, Spain*

\* Corresponding author.

E-mail address: [jlmubel@usal.es](mailto:jlmubel@usal.es) (J.L. Muñoz Bellido).

<http://dx.doi.org/10.1016/j.eimc.2016.09.006>  
0213-005X/

© 2016 Elsevier España, S.L.U. and Sociedad Española de Enfermedades Infecciosas y Microbiología Clínica. All rights reserved.