



Case report

A Case Report: *Pseudomonas Stutzeri*, An Unusual Cause of Septic Arthritis[☆]



L. Ranieri^{a,*}, S. López-Salguero^b, Y. González Galván^c, M. Andrés^{a,d}

^a Sección Reumatología, Hospital General Universitario de Alicante-ISABIAL, Alicante, Spain

^b Servicio Reumatología, Hospital Universitario Torrevieja, Spain

^c Servicio Nefrología, Hospital General Universitario de Alicante, Spain

^d Departamento de Medicina Clínica, Universidad Miguel Hernández, Elche, Spain

ARTICLE INFO

Article history:

Received 20 March 2019

Accepted 18 September 2019

Available online 18 October 2020

Keywords:

Arthritis

Pseudomonas stutzeri

Haemodialysis

Immunosuppression

ABSTRACT

A case is presented of septic knee arthritis caused by *Pseudomonas stutzeri*, which is an aerobic gram-negative bacillus widely distributed in nature and rarely causes serious infections in humans. The patient is an 84-year-old woman on haemodialysis, who developed a septic arthritis of the right knee after a hyaluronic acid injection. There was a favourable outcome after antibiotic therapy. This aetiology should be taken into account when there is a history of local invasion of the joint and in states of immunosuppression, as occurred in this patient.

© 2019 Asociación Colombiana de Reumatología. Published by Elsevier España, S.L.U. All rights reserved.

A propósito de un caso: *pseudomonas stutzeri*, una causa inusual de artritis séptica

RESUMEN

Se presenta un caso de artritis séptica de rodilla por *Pseudomonas stutzeri*, bacilo gramnegativo aerobio ampliamente distribuido en la naturaleza y que rara vez ocasiona infecciones graves en el ser humano. Se trata de una mujer de 84 años, hemodializada, que desarrolla una artritis séptica de rodilla derecha tras una infiltración con ácido hialurónico y que evoluciona favorablemente tras terapia antibiótica. Se debe tener en cuenta esta etiología cuando hay antecedentes de invasión local de la articulación y en estados de inmunosupresión tal y como sucede en nuestra paciente.

© 2019 Asociación Colombiana de Reumatología. Publicado por Elsevier España, S.L.U. Todos los derechos reservados.

Palabras clave:

Artritis

Pseudomonas stutzeri

Hemodialísis

Inmunosupresión

[☆] Please cite this article as: Ranieri L, López-Salguero S, González Galván Y, Andrés M. A propósito de un caso: *pseudomonas stutzeri*, una causa inusual de artritis séptica. Rev Colomb Reumatol. 2019. <https://doi.org/10.1016/j.rcreu.2019.09.002>

* Corresponding author.

E-mail address: Laura.ranieri.c@gmail.com (L. Ranieri).

2444-4405/© 2019 Asociación Colombiana de Reumatología. Published by Elsevier España, S.L.U. All rights reserved.

Introduction

Pseudomonas stutzeri is an aerobic gram-negative non-fluorescent bacillus, widely distributed in the environment, which has been isolated as an opportunistic human pathogen.¹ This article discusses a case of septic arthritis, secondary to *P. stutzeri*, which is an unusual causal agent of this type infection, similar to other gram-negative bacteria.²

Clinical case

This is an 84-year old female, allergic to sulfonamides and penicillin. The patient has a history of multifactorial origin chronic kidney disease, undergoing hemodialysis and calciphylaxis, with a chronic right lower limb ulcer. Additionally, the patient presents with high blood pressure, diabetes mellitus type 2, asymptomatic hyperuricemia receiving treatment with alopurinol, and gonarthrosis, who has been experiencing increasing mechanical pain over the past 2 months. The patient was treated one month before with an intra-articular infiltration of hyaluronic acid (with negligible improvement). She was admitted with right lower limb erythema and knee pain, with minor inflammatory signs and suspicious cellulitis. At home, the patient did not control her temperature. The examination revealed discrete localized fever of the right knee, and the laboratory tests showed a C-reactive protein of 28.34 mg/dL, with normal CBC. The knee X-ray showed severe joint space narrowing (grade III-IV arthrosis). The patient underwent arthrocentesis, from which 1 ml of macroscopically inflammatory synovial fluid was obtained; under the microscope, the fluid presented abundant leukocytes and intracellular pyrophosphate crystals. Due to the small fluid sample obtained, no urgent biochemistry analysis was performed. Empiric antibiotic therapy was initiated while waiting for the results of the microbiological cultures, due to the potential of septic arthritis (immunosuppressed patient). The synovial fluid culture isolated *P. stutzeri* sensitive to meropenem and quinolones, and resistant to piperacillin, with negative synovial fluid and blood cultures.

The patient remained thermodynamically stable during her hospital admission, and evolved favorably with antibiotic therapy: 2 weeks of IV meropenem 1 g/day, followed by 4 weeks of oral ciprofloxacin 500 mg every 12 h. No intra-articular drainage was required. Another option for the differential diagnosis is a pyrophosphate monoarthritis (presence of crystals under the microscope and chronic kidney disease with probable associated hyperparathyroidism). Nevertheless, the good response to antibiotic therapy, without the use of corticoids or NSAIDs, is supportive of the septic origin of the condition in this particular patient.

Discussion

P. stutzeri is usually found as a saprophyte on the floor and in hospital environments, but seldom leads to severe community or hospital acquired infection. The cases of *P. stutzeri* infection normally present in immunocompromised patients, with underlying diseases, or previous surgery. They have been more frequently isolated in surgical wounds, blood, respiratory tract and urine.³ The treatment of choice is ciprofloxacin or carbapenem,² but piperacillin-tazobactam and ceftazidime may be other options.³

Gram-positive bacteria (specifically *Staphylococcus aureus* and *Streptococcus*) are the most frequent aetiology in septic arthritis, and the empirical therapy of choice is ceftriaxone 2 g every 24 h and cloxacillin 2 g every 4 h. Other etiological possibilities should be considered in immunosuppressed patients (such as gram-negatives) and the usual empiric antibiotic regimen may not be enough.²

As far as we know, this is the sixth case of septic arthritis due to *P. stutzeri*, reported in the literature, as illustrated in Table 1. The first case reported,⁴ is a 78-year old male with a history of psoriasis and pulmonary emphysema, who developed septic arthritis following an intra-articular corticoid infiltration. The second case reported⁵ is a 37-year old patient with hip septic arthritis and a history of diabetes mellitus and alcohol abuse. The third case is a prosthetic knee infection in a 73-year old patient with pancytopenia. The fourth case⁷ is a 6-year old child with septic arthritis of the knee, secondary to

Table 1 – Reported cases of septic arthritis from *Pseudomonas stutzeri*.

Case	Infection	Country of Origin	Predisposing Factors	Bacteremia	Age/Sex	Treatment
Madhavan ⁴	Right knee	USA	Intra-articular infiltration	No	78, male	IV Carbenicillin + articular drainage
Thangkhiew ⁵	Right hip	UK	Diabetes mellitus Alcohol abuse	No	37, male	IV Ceftazidime
Bishara et al. ⁶	Right knee	Israel	Prosthesis. Pancytopenia.	Si	73, male	IV Ceftazidime + oral Ciprofloxacin
Miron et al. ⁷	Right knee	Israel	Wound	No	6, male	IV Sulfamethoxazole + Trimethoprim 12 mg/kg
Bonares et al. ⁸	Prosthesis infection	Canada	Diabetes + renal neoplasm	No	70, male	IV Ceftazidime
Current case	Right knee	Spain	Intra-articular infiltration Hemodialysis.	No	84, female	IV Meropenem + Ciprofloxacin

a knife wound. The last case reported⁸ is a 70-year old male, with prosthetic infection and a history of diabetes mellitus and renal neoplasm. Three cases of osteomyelitis have also been reported.^{8–11} Therefore, in all of the cases mentioned, there is a history of local joint invasion or a condition of immunosuppression. In this particular case, the patient was undergoing renal replacement therapy with hemodialysis and she had a history of intra-articular infiltration one month prior to the development of arthritis. All patients evolved satisfactorily with antibiotic therapy. This search was conducted in Medline, Embase, Google Scholar, BVSsalud and Scielo, using the key word “arthritis” and “*Pseudomonas stutzeri*”; we could not find any cases reported in Latin America.

Conclusion

P. stutzeri is a rare cause of septic arthritis, but it must be kept in mind in patients with septic arthritis and a history of local joint invasions or immunosuppression. Because of its sensitivity profile, the usual empiric antibiotic therapy for septic arthritis may not be helpful in this cases.

Conflict of interests

The authors have no conflict of interests to disclose.

REFERENCES

1. Lalucat J, Bennasar A, Bosch R, García-Valdés E, Palleroni NJ. Biology of *Pseudomonas stutzeri*. *Microbiol Mol Biol Rev*. 2006;70:510–47.
2. Mensa J, Gatell JM, García-Sánchez JE, Letang E, López-Suñe E. Guía terapéutica antimicrobiana. 28va. ed Barcelona: Editorial Antares; 2017.
3. Bisharat N, Gorlachev T, Keness Y. 10-years hospital experience in *Pseudomonas stutzeri* and literature review. *Bentham Open*. 2012;6:21–4.
4. Madhavan T. Septic arthritis with *Pseudomonas stutzeri* [Letter]. *Ann Intern Med*. 1974;80:670–1.
5. Thangkhiew I. *Pseudomonas stutzeri* infection of the hip joint. *J Infect*. 1986;12:183–4.
6. Bishara J, Robenshtok E, Samra Z, Pitlik S. Prosthetic knee septic arthritis due to *Pseudomonas stutzeri*. *Can J Infect Dis*. 2000;11:329–31.
7. Miron D, Keness N, Bor R, Spiegel Y, Horowitz. *Pseudomonas stutzeri* knee arthritis in a child: case report and review. *J Pediatric Orthop B*. 2007;16:419–21.
8. Bonares MJ, Vaisman A, Sharkawy A. Prosthetic vascular graft infection and prosthetic joint infection caused by *Pseudomonas stutzeri*. *IDCases*. 2016;6:106–8.
9. Reisler RB, Blumberg H. Community-acquired *Pseudomonas stutzeri* vertebral osteomyelitis in a previously healthy patient: case report and review. *Clin Infect Dis*. 1999;29:667–9.
10. Rowley AH, Dias LD, Chadwick EG, Shulman ST. *Pseudomonas stutzeri*: an unusual cause of calcaneal *Pseudomonas* osteomyelitis. *Pediatr Infect Dis J*. 1987;6:296–7.
11. Gilardi GL. Infrequently encountered *Pseudomonas* species causing infection in humans. *Ann Intern Med*. 1972;77:211–5.