Hindawi
Case Reports in Infectious Diseases
Volume 2020, Article ID 6346120, 4 pages
https://doi.org/10.1155/2020/6346120

Case Report

Oral Infection Caused by *Stenotrophomonas maltophilia*: A Rare Presentation of an Emerging Opportunistic Pathogen

Marcelo Prates, Fernando Fernandes, Francisco Proença, Yashad Mussá, Ana Tavares, and André Pereira

Stomatology Department, Centro Hospitalar Universitário de Lisboa Central - Hospital de São José, Lisbon, Portugal

Correspondence should be addressed to Marcelo Prates; mprates@campus.ul.pt

Received 6 November 2019; Accepted 20 December 2019; Published 29 January 2020

Academic Editor: Gloria Taliani

Stenotrophomonas maltophilia is an emerging multidrug-resistant opportunistic pathogen with an increasing incidence of nosocomial and community-acquired infection cases, mainly in immunocompromised individuals. Oral cavity infections are rare. To learn more about this infection, a case of oral cavity infection caused by *S. maltophilia* in an immunosuppressed patient under ventilatory therapy has been presented. The patient presented with multiple nonpainful erosive lesions of the tongue, palate, and oral mucosa. A smear of the oral lesions was performed that revealed the presence of *S. maltophilia* and *Candida albicans*, and the patient was treated with fluconazole and sulfamethoxazole associated with trimethoprim in accordance with the antimicrobial susceptibility testing. After 14 days of antibiotic therapy, there were almost no signs of the previous lesions.

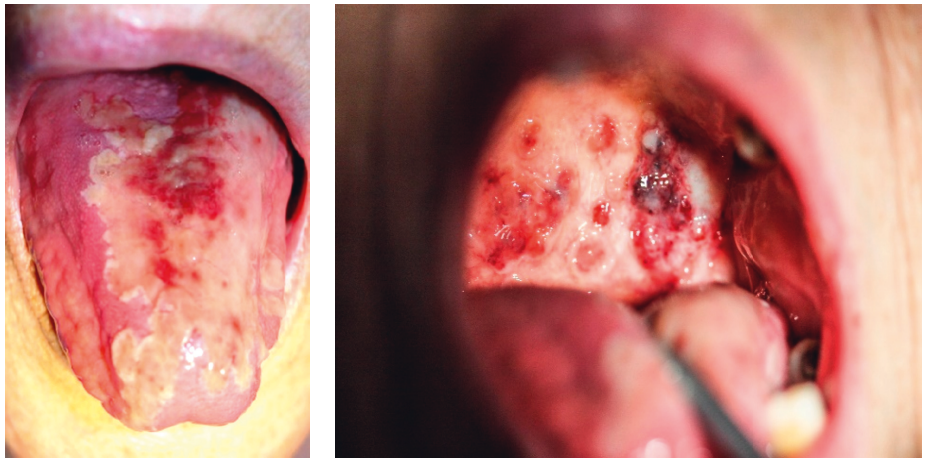
1. Introduction

Stenotrophomonas maltophilia is an emerging multidrug-resistant opportunistic pathogen [1]. It is a Gram-negative obligate aerobe bacterium found in aqueous habitats. In clinical practice, it is usually found in hospital suction tubing, ventilator inspiratory or expiratory circuits, central venous catheters, dental suction system hoses, hemodialysis water, and dialysate of renal units [1, 2]. Although not highly virulent, the increasing incidence of nosocomial and community-acquired *S. maltophilia* infections is of particular concern for immunocompromised individuals, as this bacterial pathogen is associated with high morbidity and mortality [1–6]. Risk factors for *Stenotrophomonas maltophilia* infection include underlying malignancy [7], the presence of indwelling devices [7], chronic respiratory disease, immunocompromised host [7], prior use of antibiotics [8], and long-term hospitalization or ICU stay [6, 9]. Although infections by *Stenotrophomonas maltophilia* can occur in a lot of different organs and tissues, this agent is commonly found in respiratory tract infections like pneumonia or acute exacerbations of chronic obstructive pulmonary disease. Less frequent infections can occur in soft tissue and skin, bloodstream, urinary tract, surgical-site related infections, endocarditis, meningitis, intra-abdominal infections, and endophthalmitis [10–25]. Oral cavity infections are not described.

2. Case Report

A 78-year-old female was hospitalized at an intermediate care unit due to a cardiorespiratory decompensation. The patient had history of high blood pressure associated with hypertensive cardiopathy and cardiac insufficiency, diabetes mellitus type 2, chronic kidney disease under dialysis, and chronic obstructive pulmonary disease with respiratory insufficiency.

After 11 days of noninvasive ventilatory support and due to the sudden onset of oral lesions, she was referred to the Stomatology Department for observation. At this moment, the patient was on day 10 of antibiotic therapy with piperacillin-tazobactam because of a pneumonia caused by *Streptococcus pneumoniae* and under oral fluconazole and topical nystatin since the appearance of the oral lesions,



(a) (b)

Figure 1: Tongue (a) and palatal (b) lesions when first observed.

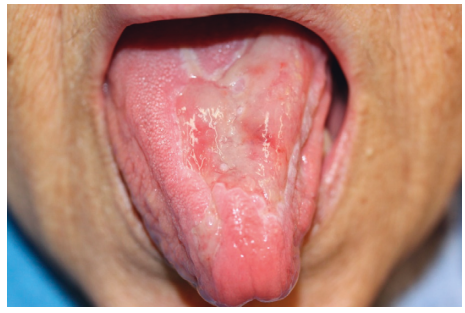
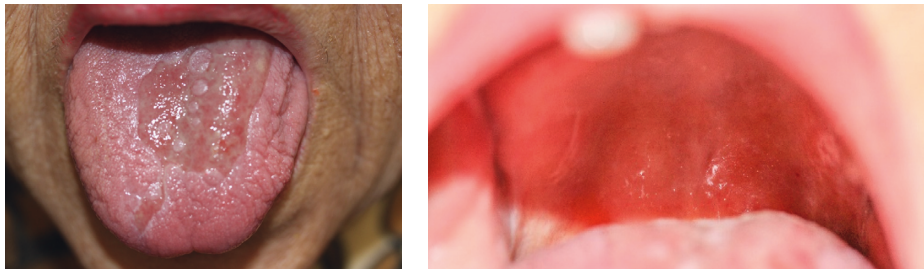


Figure 2: Tongue lesions 6 days after beginning directed antibiotic therapy.



(a) (b)

Figure 3: Tongue (a) and palate (b) at the discharge day after 14 days of directed antibiotic therapy.

without any improvement.

Upon clinical examination, there were multiple erosive lesions of the tongue, palate, and oral mucosa (Figure 1). The tongue lesions were covered by a cream color membrane that was detachable. None of the lesions were painful.

We decided to do a biopsy of the ulcers and a smear of the mouth with fungal and bacterial exam and maintain the antibiotic and antifungal therapy.

The histopathological exam was described as an "unspecific ulcer." The bacterial exam of the smear revealed an infection by a multidrug-resistant *Stenotrophomonas maltophilia* only sensitive to cotrimoxazol (sulfamethoxazole + trimethoprim), and the fungal exam revealed the presence of *Candida albicans*.

Following the antimicrobial susceptibility testing and after discussing with the Intermediate Care Unit team, the antibiotic was changed while maintaining the antifungal therapy.

After 6 days, there were clear signs of improvement (Figure 2). At the day of the discharge, after 14 days of directed antibiotic therapy, there were almost no signs of the previous lesions (Figure 3).

3. Discussion and Conclusion

This case report involves a 78-year-old female with an oral infection caused by *Stenotrophomonas maltophilia* and

Candida albicans. Diagnosis was based on the oral smear with bacterial and fungal exam. Biopsy and histopathological exam were not useful in this case. Confirmation of the infection and the antimicrobial susceptibility test allowed us to change the antibiotic accordingly. The patient had a good oral evolution after beginning directed antibiotic therapy with no prejudice to the improvement of her systemic condition. Due to the fact that *Stenotrophomonas maltophilia* is a multidrug-resistant opportunistic pathogen with an increasing incidence in immunocompromised individuals and since the patient was already under antibiotic therapy, the identification of the agent and its antibiotic susceptibility was a key factor to the positive outcome. This case goes accordingly to literature where it is stated that cotrimoxazol is the most effective antibiotic against *Stenotrophomonas maltophilia* [4, 5, 26–29]. However, there has been an increase in antibiotic resistance observed in *S. maltophilia* isolates worldwide, and the lag in development of new antimicrobials emphasizes the need to develop novel therapeutics [27–31].

In conclusion, the incidence of *Stenotrophomonas maltophilia*-related infections is increasing and we have to be aware of the possibility of oral infections caused by this agent mainly in immunocompromised patients under ventilatory support. This case also shows that the oral smear, which is not usually used in oral cavity due to its rich normal flora, can be an important tool on the diagnosis and treatment of these conditions.

Ethical Approval

Ethical approval was obtained.

Consent

The patient gave consent for publication.

Conflicts of Interest

The authors declare no conflicts of interest.

Authors' Contributions

Marcelo Prates was responsible for clinical data collection, manuscript construction, editing, and submission and is the second surgeon. Fernando Fernandes was responsible for clinical data collection and interpretation. Francisco Proença was responsible for clinical data collection and interpretation and is the main surgeon. Yashad Mussá, Ana Tavares, and André Pereira were responsible for literature search and manuscript revision.

Acknowledgments

This paper was supported by Centro Hospitalar Universitário de Lisboa Central.

References

[1] J. S. Brooke, "*Stenotrophomonas maltophilia*: an emerging global opportunistic pathogen," *Clinical Microbiology Reviews*, vol. 25, no. 1, pp. 2–41, 2012.

[2] A. De Mauri, M. Torreggiani, D. Chiarinotti, S. Andreoni, G. Molinari, and M. De Leo, "*Stenotrophomonas maltophilia*: an emerging pathogen in dialysis units," *Journal of Medical Microbiology*, vol. 63, no. Pt_11, pp. 1407–1410, 2014.

[3] M. E. Falagas, A. C. Kastoris, E. K. Vouloumanou, P. I. Rafailidis, A. M. Kapaskelis, and G. Dimopoulos, "Attributable mortality of *Stenotrophomonas* maltophiliainfections: a systematic review of the literature," *Future Microbiology*, vol. 4, no. 9, pp. 1103–1109, 2009.

[4] W. J. Looney, M. Narita, and K. Mühlemann, "*Stenotrophomonas maltophilia*: an emerging opportunist human pathogen," *The Lancet Infectious Diseases*, vol. 9, no. 5, pp. 312–323, 2009.

[5] G. Samonis, D. E. Karageorgopoulos, S. Maraki et al., "*Stenotrophomonas maltophilia* infections in a general hospital: patient characteristics, antimicrobial susceptibility, and treatment outcome," *PLoS One*, vol. 7, no. 5, Article ID e37375, 2012.

[6] K. Osawa, K. Shigemura, K. Kitagawa, I. Tokimatsu, and M. Fujisawa, "Risk factors for death from *Stenotrophomonas maltophilia* bacteremia," *Journal of Infection and Chemotherapy*, vol. 24, no. 8, pp. 632–636, 2018.

[7] L. Calza, R. Manfredi, and F. Chiodo, "*Stenotrophomonas (Xanthomonas) maltophilia* as an emerging opportunistic pathogen in association with HIV infection: a 10-year surveillance study," *Infection*, vol. 31, no. 3, pp. 155–161, 2003.

[8] A. Apisarnthanarak, J. L. Mayfield, T. Garison et al., "Risk factors for *Stenotrophomonas maltophilia* bacteremia in oncology patients: a case-control study," *Infection Control & Hospital Epidemiology*, vol. 24, no. 4, pp. 269–274, 2003.

[9] C. H. Lai, C. Y. Chi, H. P. Chen et al., "Clinical characteristics and prognostic factors of patients with *Stenotrophomonas maltophilia* bacteremia," *Journal of Microbiology, Immunology, and Infection = Wei Mian Yu gan Ran Za Zhi*, vol. 37, no. 37, pp. 350–358, 2004.

[10] M. Denton and K. G. Kerr, "Microbiological and clinical aspects of infection associated with *Stenotrophomonas maltophilia*," *Clinical Microbiology Reviews*, vol. 11, no. 1, pp. 57–80, 1998.

[11] E. Senol, "*Stenotrophomonas maltophilia*: the significance and role as a nosocomial pathogen," *Journal of Hospital Infection*, vol. 57, no. 1, pp. 1–7, 2004.

[12] N. D. Friedman, T. M. Korman, C. K. Fairley, J. C. Franklin, and D. W. Spelman, "Bacteraemia due to *Stenotrophomonas maltophilia*: an analysis of 45 episodes," *Journal of Infection*, vol. 45, no. 1, pp. 47–53, 2002.

[13] S. Subhani, A. N. Patnaik, R. Barik, and L. Nemani, "Infective endocarditis caused by *Stenotrophomonas maltophilia*: a report of two cases and review of literature," *Indian Heart Journal*, vol. 68, no. 2, pp. S267–S270, 2016.

[14] E. Morte, M. Tolmos, A. Halperin, M. I. Morosini, R. Cantón, and J. M. Hermida, "Early prosthetic endocarditis caused by *Stenotrophomonas maltophilia*," *Médecine et Maladies Infectieuses*, vol. 48, no. 8, pp. 543–546, 2018.

[15] N. F. Crum, G. C. Utz, and M. R. Wallace, "*Stenotrophomonas maltophilia* endocarditis," *Scandinavian Journal of Infectious Diseases*, vol. 34, no. 12, pp. 925–927, 2002.

[16] D. Padilla, T. Cubo, M. Dolores Romero et al., "Infección nosocomial por Stenotrophomonas maltophilia en enfermos intervenidos quirúrgicamente," *Enfermedades Infecciosas Y*

Microbiología Clínica, vol. 20, no. 4, pp. 189-190, 2002.

[17] E. Platsouka, C. Routsi, O. Paniara, C. Roussos, E. Dimitriadou, and A. Chalkis, "*Stenotrophomonas maltophilia* meningitis, bacteremia and respiratory infection," *Scandinavian Journal of Infectious Diseases*, vol. 34, no. 5, pp. 391-392, 2002.

[18] E. Sakhnini, A. Weissmann, and I. Oren, "Fulminant *Stenotrophomonas maltophilia* soft tissue infection in immunocompromised patients: an outbreak transmitted via tap water," *The American Journal of the Medical Sciences*, vol. 323, no. 5, pp. 269–272, 2002.

[19] C. Moser, V. Jonsson, K. Thomsen, J. Albrectsen, M. M. Hansen, and J. Prag, "Subcutaneous lesions and bacteraemia due to *Stenotrophomonas maltophilia* in three leukaemic patients with neutropenia," *British Journal of Dermatology*, vol. 136, no. 6, pp. 949–952, 1997.

[20] R. L. Burns and L. Lowe, "*Xanthomonas maltophilia* infection presenting as erythematous nodules," *Journal of the American Academy of Dermatology*, vol. 37, no. 5, pp. 836–838, 1997.

[21] S. E. Vartivarian, K. A. Papadakis, and E. J. Anaissie, "*Stenotrophomonas (Xanthomonas) maltophilia* urinary tract infection. A disease that is usually severe and complicated," *Archives of Internal Medicine*, vol. 156, no. 4, pp. 433–435, 1996.

[22] J. Fujita, I. Yamadori, G. Xu et al., "Clinical features of *Stenotrophomonas maltophilia* pneumonia in immunocompromised patients," *Respiratory Medicine*, vol. 90, no. 1, pp. 35–38, 1996.

[23] G. Taylor, M. McKenzie, M. Buchanan-Chell, D. Perry, L. Chui, and M. Dasgupta, "Peritonitis due to *Stenotrophomonas maltophilia* in patients undergoing chronic peritoneal dialysis," *Peritoneal Dialysis International*, vol. 19, no. 3, pp. 259–262, 1999.

[24] I. A. Khan and N. J. Mehta, "*Stenotrophomonas maltophilia* endocarditis: a systematic review," *Angiology*, vol. 53, no. 1, pp. 49–55, 2002.

[25] W. S. Wang, C. P. Liu, C. M. Lee, and F. Y. Huang, "*Stenotrophomonas maltophilia* bacteremia in adults: four years' experience in a medical center in northern Taiwan," *Journal of Microbiology, Immunology and Infection*, vol. 37, no. 6, pp. 359–365, 2004.

[26] V. Gautam, S. Kumar, P. Kaur et al., "Antimicrobial susceptibility pattern of Burkholderia cepacia complex & Stenotrophomonas maltophilia over six years (2007–2012)," *Indian Journal of Medical Research*, vol. 142, no. 4, pp. 492–494, 2015.

[27] A. C. Nicodemo and J. I. G. Paez, "Antimicrobial therapy for *Stenotrophomonas maltophilia* infections," *European Journal of Clinical Microbiology & Infectious Diseases*, vol. 26, no. 4, pp. 229–237, 2007.

[28] L. Singhal, P. Kaur, and V. Gautam, "*Stenotrophomonas maltophilia*: from trivial to grievous," *Indian Journal of Medical Microbiology*, vol. 35, no. 4, pp. 469–479, 2017.

[29] I. J. Abbott, M. A. Slavin, J. D. Turnidge, K. A. Thursky, and L. J. Worth, "*Stenotrophomonas maltophilia*: emerging disease patterns and challenges for treatment," *Expert Review of Anti-Infective Therapy*, vol. 9, no. 4, pp. 471–488, 2011.

[30] J. S. Brooke, "New strategies against *Stenotrophomonas maltophilia*: a serious worldwide intrinsically drug-resistant opportunistic pathogen," *Expert Review of Anti-Infective Therapy*, vol. 12, no. 1, pp. 1–4, 2014.

[31] P. Huedo, X. Coves, X. Daura, I. Gibert, and D. Yero, "Quorum sensing signaling and quenching in the multidrug-resistant pathogen *Stenotrophomonas maltophilia*," *Frontiers in Cellular and Infection*, vol. 8, no. 122, 2018.