

## A Rare Case of Corneal Abscess Caused by *Lysinibacillus Sphaericus*

El Houcine Malki<sup>1\*</sup>, Rabii EL Bahraouy<sup>1</sup>, Mourad Belaouni<sup>1</sup>, Khalid Lahmadi<sup>2</sup>, Karim Souly<sup>1</sup>, Mimoun Zouhdi<sup>1</sup>

<sup>1</sup>Faculty of Medicine and Pharmacy of Rabat, Morocco

<sup>2</sup>Faculty of Medicine and Pharmacy of Fes, Morocco

DOI: [10.36348/sjpm.2024.v09i05.005](https://doi.org/10.36348/sjpm.2024.v09i05.005)

| Received: 17.12.2020 | Accepted: 31.12.2020 | Published: 27.05.2024

\*Corresponding author: El Houcine Malki

Faculty of Medicine and Pharmacy of Rabat, Morocco

### Abstract

*Bacillus* spp. and related bacteria such as *Lysinibacillus* spp. are commonly regarded as contaminants if isolated in the laboratory primarily due to their ubiquitous nature and perceived lack of pathogenicity. There are no reports of ocular infection by this agent in the literature. This article describes an unusual case of corneal abscess caused by *Lysinibacillus sphaericus*, which developed after corneal trauma.

**Keywords:** Corneal abscess, *Lysinibacillus sphaericus*.

**Copyright © 2024 The Author(s):** This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

### INTRODUCTION

Corneal abscess is a frequent corneal pathology in the ophthalmology emergency services. In most of the cases, an epithelial defect makes infection more accessible for germs.

The microorganisms that are most frequently accountable for these clinical diagnoses are *Pseudomonas*, *Staphylococcus* and *Streptococcus* [1].

*Lysinibacillus sphaericus*, formerly known as *Bacillus sphaericus*, often regarded as environmental contaminants when isolated in the clinical microbiology laboratory, although their potential to cause human disease has been documented. [2]

We report a rare case of corneal abscess caused by *Lysinibacillus sphaericus*.

### CASE REPORT

This is a 50-year-old patient from and living in the city of Meknes followed for goiter with no other particular history, Traumatized by a tree branch in the right eye, a week later she presented in the ophthalmology department with a progressive decrease in visual acuity and redness of the same eye, the ophthalmologic examination revealed: Conjunctival hyperemia a well-limited anterior paracentral corneal abscess measuring 4mm / 3mm with an ulcer opposite, Normal fundus the rest of the exam is unremarkable.

A corneal scraping was performed under aseptic condition and sent to the central bacteriology laboratory, Treatment with ciproflaxacin eye drops at a rate of one drop per hour and abundant eye washes on arrival of the sample, a direct examination with fresh state was performed showing a significant cellular reaction to polynuclear neutrophils and gram positive bacilli, Culture on chocolate and Chapman agar was positive after incubation for 24 hours aerobically at 37°C (Figure-1).



Fig-1: Culture on Chapman agar

BD-Phoenix TM 100 gallery identification resulted in *Lysinibacillus sphaericus*. The performance of the antibiogram showed sensitivity to quinolones, thus

confirming the choice of ciproflaxacin for the treatment of this case;

After a week of treatment, the evolution was favorable and without sequelae.

## DISCUSSION

Infective keratitis is a corneal affection that can entail serious results for vision. It is a common pathology in ophthalmology emergency services. On facing a corneal lesion, the ophthalmologist has two objectives: first, to make out if the inflammatory clinical picture is immune or was caused by an infection; and second, and in case of an infection, to try and define the responsible germ. [3]

The eye's defence mechanisms are the eyelids, tears, ocular microbial flora, the immune system and the whole corneal epithelium [1]. The factors that enhance the appearance of infections in the cornea are surgical and non-surgical ocular trauma, dry eye, chronic corneal disease, eye adnexes, immune alterations and contact lenses [3].

The microorganisms that are most frequently accountable for these clinical diagnoses are pseudomonas and staphylococcus; and in the developing countries, the most frequent cause is streptococcus [1]

*Lysinibacillus* spp., are Gram positive or Gram variable, aerobic or facultative anaerobic rod-shaped bacilli that form endospores, tolerate extremes of environment and are ubiquitous [4]. Initially designated *B. sphaericus*, the name was subsequently changed based on the distinctive peptidoglycan composition of its cell wall, along with further phylogenetic and physiological analyses [5]. *L.sphaericus* is fairly large in size and grows easily on culture media at environmental temperatures, but is rarely isolated from human specimens [4].

*Bacillus* spp. and related bacteria such as *Lysinibacillus* spp. are commonly regarded as contaminants if isolated in the laboratory primarily due to their ubiquitous nature and perceived lack of pathogenicity. Despite this perception, they have been known to cause serious infections in humans. Bacteremia has been the most common presentation of systemic infections due to *Bacillus* species, particularly associated with the presence of an intravas-cular or surgically implanted catheter. Disseminated *Bacillus* spp. infections have been reported in neonates, neutropenic

patients and injection drug users. The largest case report of *L. sphaericus* bacteremia to our knowledge represented 12 cases over a 10 year period at a children's cancer hospital in Italy [6].

All isolates were susceptible to fluoroquinolones and all 12 patients were treated with ciprofloxacin and survived.

## CONCLUSION

*Lysinibacillus sphaericus* is a bacterium rarely involved in human pathology. The infection in our case was accidental resulting in a corneal abscess which is a serious and frequent condition that can lead to blindness. Early treatment adapted to microbiological results improves the prognosis.

## REFERENCES

1. Pérez-Santonja, J. J., & Hervás-Hernandis, J. M. (2006). *Queratitis infecciosas: fundamentos, técnicas diagnósticas y tratamiento* (Vol. 278). Ergon.
2. Castagnola, E., Fioredda, F., Barretta, M. A., Pescetto, L., Garaventa, A., Lanino, E., ... & Dini, G. (2001). *Bacillus sphaericus* bacteraemia in children with cancer: case reports and literature review. *Journal of Hospital Infection*, 48(2), 142-145.
3. Ruescas, V. B., Blanco-Marchite, C. I., Donate-Tercero, A., Blanco-Marchite, N., & Alvarruiz-Picazo, J. (2009). *Streptococcus pneumoniae* keratitis, a case report. *Clinical Practice*, 1(1).
4. Fekete, T. (2010). *Bacillus* Species and Related Genera Other than *Bacillus anthracis*. In Mandell, G. L., Bennett, J. E., & Dolin, R. *Mandell, Douglas and Bennett's Principles and Practice of Infectious Diseases*. 7th Edition. 209: 2727-2731.
5. Ahmed, I., Yokota, A., Yamazoe, A., & Fujiwara, T. (2007). Proposal of *Lysinibacillus boronitolerans* gen. nov. sp. nov., and transfer of *Bacillus fusiformis* to *Lysinibacillus fusiformis* comb. nov. and *Bacillus sphaericus* to *Lysinibacillus sphaericus* comb. nov. *International Journal of Systematic and Evolutionary Microbiology*, 57(5), 1117-1125.
6. Wenzler, E., Kamboj, K., & Balada-Llasat, J. M. (2015). Severe sepsis secondary to persistent *Lysinibacillus sphaericus*, *Lysinibacillus fusiformis* and *Paenibacillus amylolyticus* bacteremia. *International Journal of Infectious Diseases*, 35, 93-95.