festaciones fueron fundamentalmente cutáneas (75%), seguidas de anafilaxia (1,8%), DRESS (0,9%) y el resto no recordó/no supo identificar la reacción. El principal grupo antibiótico implicado fueron los betalactámicos (83,3%), principalmente penicilinas, seguido de aminoglucósidos, quinolonas, cotrimoxazol y sulfamidas. Por otro lado, 165 interconsultas (74,3%) procedían de pacientes que presentaron cuadro sospechoso de alergia durante el ingreso hospitalario, solicitando valoración al servicio de alergología. Nuevamente los betalactámicos fueron los principales implicados. En 64 pacientes se descartó alergia mediante estudio alergológico. El estudio realizado consistió en una anamnesis dirigida, realización de pruebas cutáneas y test de provocación oral en aquellos pacientes en los que se consideró necesario. En 46 de ellos se pudo administrar finalmente el fármaco prohibido, tal y como se detalla en la tabla 1. Finalmente, al alta hospitalaria se propuso estudio diferido en 188 pacientes (84,6%), de los que acudieron a consulta 84 (44,6%). En este grupo se descartó alergia en 35 pacientes (41,6%) y se demostró en 21 pacientes (25%) siendo nuevamente los betalactámicos los más frecuentemente implicados. Hubo 19 estudios no concluyentes (22,6%) y 9 continúan en estudio (10,7%).

En nuestra revisión, la mitad de las interconsultas realizadas fueron por pacientes que referían antecedentes de alergia a antibióticos. El principal grupo implicado y las manifestaciones referidas coinciden con lo descrito en la literatura[2] (fundamentalmente betalactámicos y manifestaciones cutáneas) y la gran mayoría no aportaba estudios alergológicos previos. Una anamnesis detallada, en la que se interrogue al paciente por la sintomatología, posibles factores concomitantes y circunstancias acompañantes del suceso previo, es fundamental para descartar un cuadro alérgico de otras entidades clínicas. En muchas ocasiones, una historia clínica detallada es suficiente para orientarnos hacia una intolerancia o efecto adverso del fármaco, más que hacia un cuadro alérgico. Registrar una falsa alergia a un antibiótico en la historia clínica de un paciente puede llevar a la prescripción de otros fármacos más costosos o no tan eficaces[3–6]. La administración de betalactámicos, principal grupo implicado en sospechas de alergia en nuestros pacientes ingresados, fue finalmente posible en la mayoría de ellos tras el estudio por el servicio de alergología[7]. Igualmente, el estudio ambulante también permitió descartar alergia en un porcentaje importante de pacientes. Posibles limitaciones de este estudio son su carácter retrospectivo y, que al valorar pacientes hospitalizados, la alergia ha podido estar sobreestimada debido a las propias comorbilidades del paciente y la polimedicación por el riesgo de interacciones medicamentosas que conlleva.

En conclusión, una anamnesis detallada al paciente junto con la valoración por el servicio de alergología, son fundamentales para confirmar o descartar alergia a un grupo antibiótico, permitiéndonos en la mayoría de los casos su uso posterior y evitar la administración de tratamientos más costosos y menos óptimos.

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Corneal infection due to *Moraxella nonliquefaciens*

Infección corneal debida a Moraxella nonliquefaciens

Moraxella spp accounts for approximately 5% of all corneal ulcers[1] and can lead to severe complications. Several investigations have focused on the characteristics of *Moraxella* keratitis[2,3] but until recently, no cases of corneal infections due to *Moraxella nonliquefaciens* have been published in the medical literature. We have reported a case of corneal abscess due to *M. nonliquefaciens*,[4] and after this, we have seen two additional cases of corneal infection due to this pathogen. In this article we describe the main characteristics of these very rare infections.

Case 1. An 85-year-old man refers red eye and intense pain. A corneal ulcer located in the inferior hemicornea with a minor epithelial defect was detected. Treatment with tobramycin plus ciprofloxacin plus cycloplegic eyedrops was started. Several corneal scrapings were taken, and they were processed for bacterial and fungal culture. No study for viruses was performed. Gram staining exhibited no microorganisms. On the second day of incubation the growth of abundant colonies of a non-hemolytic and both positive catalase and oxidase microorganism was reported in pure culture. A mass spectrometry method (Bruker Biotyper, Billerica, MA) identified the strain as *M. nonliquefaciens* (log score 2.024). The culture in Sabouraud agar was negative after 21 days of incubation. Susceptibility to amoxicillin-clavulanate, cefotaxime, levofloxacin, azithromycin, thrimetroprim-sulphametoxazole was demonstrated. At 3 months of follow-up neither recurrence nor complications were observed.

Case 2. A 73-year-old woman was seen due to red eye and pain. Physical examination revealed conjunctival hiperemia and a central corneal ulcer with a minor infiltrate. Treatment with vancomycin plus ceftazidime plus cycloplegic eyedrops was started. Corneal scrapings were processed in the same way that in the case 1. On the first day of incubation, the growth of abundant colonies of a

Table 1
Main characteristics of patients with corneal infection due to *Moraxella nonliquefaciens*.

Case	Age (years)/sex	Type of infection/location	Underlying conditions and/or risk factors	Clinical manifestations	Microbiological diagnosis	Identification method	Antimicrobial treatment	Outcome
1	85/Male	Corneal ulcer Inferior	Lagophthalmos (corneal exposure)	Red eye, intense pain, minor epithelial defect, inferior corneal infiltrate	Corneal ulcer culture	Maldi-tof MS	Tobramycin + ciprofloxacin	Cure
2	73/Female	Corneal ulcer Central	Previous blepharo-conjunctivitis	Red eye, pain, central corneal infiltrate, conjunctival hiperemia	Corneal ulcer culture	Maldi-tof MS	Vancomycin + ceftazidime + moxifloxacin	Cure
3[a]	71/Male	Corneal abscess Central	Previous corneal damage	Red eye, loss of vision, corneal edema, central corneal infiltrate	Corneal abscess culture	Maldi-tof MS	Vancomycin + ceftazidime + tobramycin + azythromycin	Cure

[a] Cobo F, et al. JMM Case Reports, 2018.

microorganism of the same characteristics that in the case 1 was reported in pure culture. The mass spectrometry method also identified the strain as *M. nonliquefaciens* (log score 2.144). The culture in Sabouraud agar was negative after 21 days of incubation. Susceptibility was the same that in case 1. Treatment was then modified and moxifloxacin eyedrops plus ciprofloxacin in ointment was started. After 6 months, a corneal re-epithelization was demonstrated and no recurrence was observed.

Ocular infections due to *M. nonliquefaciens* have been rarely described. These, have been classically associated with some predisposing factors such as chronic alcoholism, malnutrition, diabetes mellitus, and poor sanitary habits.[5,6] However, our patients did not have any of these systemic factors, but they had local predisposing diseases such as corneal damage or previous corneal infection (Table 1), like recent investigations found.[3,7,8] The recent scientific evidence has demonstrated that local predisposing factors may be more important that systemic factors for *Moraxella* keratitis.

Clinically, corneal infection due to *Moraxella* spp has been characterized as a central ulceration with deep stromal involvement, hypopyon, and perforation. None of our patients had hypopyon or deep stromal involvement. Some investigations have shown that location of ulcer is variable[2,8] and hypopion is not always present.[7]

The treatment of choice for *M. nonliquefaciens* infections has not yet been established. Moreover, no specific breakpoints have been established for species of *Moraxella* other than *M. catarrhalis*, so we have used these breakpoints for interpretation. In our three patients, different successful treatment regimens were used (Table 1), as well as in other investigations involving *Moraxella* corneal infections.[2,3,7,8] The best outcome seems to be obtained with a multi-drug approach in most cases.[3,7,8]

A study reported good outcome in all patients, except two of them who showed perforation despite aggressive medical and surgical therapy,[8] and tends to recover within 2 weeks in the majority of patients.[3] The patients that had undergone penetrating keratoplasty for corneal perforation had a poor visual outcome.[7] Our patients had a good outcome and a complete re-epithelization was demonstrated.

In conclusion, keratitis caused by *M. nonliquefaciens* is rare and must be suspected in patients with local predisposing factors such as corneal damage or previous corneal infection. Treatment of corneal traumas is very important in order to avoid dissemination of infection into the eye, so prompt and appropriate treatment of these lesions may help to both avoid complications and recover total vision.

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