

## Letter to the Editor

### *Moraxella* keratitis: risk factors, presentation, and management

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Editor,

*Moraxella* accounts for approximately 5% of all corneal ulcers. (Varaprasathan et al. 2004) *Moraxella* keratitis can lead to severe ulceration and significant vision loss, and is often associated with compromised host immunity with chronic alcoholism,

malnutrition, diabetes and poor sanitary habits considered as important predisposing factors.

A retrospective chart review was performed on 21 patients of 21 culture-proven cases of *Moraxella* keratitis treated at University of Michigan W.K. Kellogg Eye Center from 1999 to 2007, and the predisposing factors, clinical presentation, and outcomes of management in these patients were evaluated.

The following data were collected for each patient: age, gender, predisposing risk factors (ocular and systemic), ulcer location, slit-lamp examination, presenting and final visual acuity, and medical and surgical treatment plans and outcomes.

All of the ulcers were cultured; positive *Moraxella* cultures showed evidence of many colonies. After clinical diagnosis, intensive medical treatment was started in all patients. The main outcomes are showed in Table 1.

The mean age of the NINE male and 12 female patients was 59.9 (range 18–89) years. Predisposing ocular and systemic risk factors were identified in 61.9% of patients with systemic conditions (diabetes mellitus) being present in 23.8% of patients.

Ocular risk factors were identified in 12 patients: seven patients had blepharitis; three patients had previously had corneal transplantation; three patients had a diagnosis of glaucoma; ectropion, lagophthalmos, herpes simplex virus keratitis, and proptosis were present in one patient each. No predisposing risk factor could be identified in 38.1% of cases, and none of the patients were alcoholics or malnourished.

All patients were treated medically with various antibiotic combinations, use of tissue adhesive was necessary in four patients, two of whom subsequently required penetrating keratoplasty because of perforation and a total of seven patients required surgical procedures. Despite aggressive medical and surgical treatment, visual outcomes were poor. Final best corrected visual acuity improved to  $\geq 20/100$  in only four cases (19.0%) of central ulceration and four cases (19.0%) of paracentral ulceration.

*Moraxella* keratitis has been characterized as a central ulceration with deep stromal involvement, hypopyon, and a tendency for perforation. (Fedukowicz & Horwich 1953) Heidemann et al. described ten cases which

**Table 1.** Outcomes of 21 patients with *Moraxella* keratitis examined at W.K. Kellogg Eye Center from 1999 to 2007.

Case no	Age/Sex	Risk factors		Best corrected visual acuity		Location	Treatment		Complications
		Systemic	Ocular	Presentation	Final		Medical	Surgical	
1	47/F	–	–	20/50	20/70	Central	Ci	KPro	Perforation
2	36/F	–	–	HM	HM	Central	O, Ci	–	–
3	18/M	–	–	20/60	20/40	Paracentral	K, T	–	–
4	89/F	–	Blepharitis	LP	HM	Central	K, G	–	–
5	42/F	–	–	CF	20/400	Paracentral	V, O, Ci	–	–
6	65/F	–	–	20/400	20/200	Central	G, K	PKP	–
7	21/F	–	–	CF	CF	Central	G, K, Ci	–	–
8	61/M	–	–	LP	CF	Paracentral	K, G, Ci	PKP	–
9	88/F	–	Ectropion	HM	CF	Paracentral	Ci, K, T	–	–
10	89/F	–	–	HM	LP	Central	Ci, T	–	–
11	77/M	–	Herpes Simplex Keratitis	LP	20/200	Central	Ci, G, K	PKP	–
12	32/M	–	Multiple PKP	20/400	20/40	Paracentral	V, T	–	–
13	86/M	–	Blepharitis, Glaucoma	NLP	Prosthesis	Central	–	Enucleation	Perforation
14	47/F	–	Multiple PKP	5/200	N/A	Central	V, T	–	–
15	78/F	DM	–	HM	20/70	Central	T, Ce	–	–
16	61/F	–	Blepharitis, Proptosis	20/50	20/25	Paracentral	Ga	–	–
17	67/M	DM	Blepharitis, Multiples PKP, Glaucoma	CF	20/60	Central	Ga, Ci, A	PKP	–
18	61/M	DM	Blepharitis	HM	20/400	Central	M, T	–	–
19	57/M	–	Blepharitis	HM	CF	Central	K, T	TCT	–
20	68/M	DM	Blepharitis, Lagophthalmos	5/200	20/40	Paracentral	V, T	–	–
21	69/F	DM	Glaucoma	20/400	20/40	Central	V, T	–	–

M = male; F = female; DM = diabetes mellitus; PKP = penetrating keratoplasty; LP = light perception; HM = hand motion; CF = count fingers; V = fortified vancomycin; T = fortified tobramycin; K = fortified cephalosporin; Ge = fortified gentamicin; Ci = ciprofloxacin; O = ofloxacin; Ga = gatifloxacin; M = moxifloxacin; Ce = ceftazidime; A = acyclovir; KPro = keratoprosthesis; TCT = temporary central tarsorrhaphy.

had predisposing ocular or systemic conditions. (Heidemann et al. 1987) However, Das et al. reported 95 cases of culture-proved *Moraxella* keratitis with only 13% with systemic risk factors. (Das et al. 2006) In the present study, there were no alcoholics or malnourished patients while diabetes was present in only five patients (23.8%). In fact, the diabetic patients did not have an unfavourable outcome, as measured by final best corrected visual acuity and need for additional surgery, when compared to the nondiabetics.

More than 47.6% (10 of 21) of our patients were treated with single or multi-drug combinations of fluoroquinolones. Although the best outcomes were obtained with a multi-drug combination of a fluoroquinolone, cefazolin and fortified tobramycin, the results were less than ideal. Final best corrected visual acuity and need for

surgery did not correlate with use of fluoroquinolone or multi-drug treatment.

*Moraxella* keratitis must be suspected in patients with corneal ulceration regardless of the absence of systemic risk factors such as malnutrition and alcoholism. Close follow-up and observation are mandatory because of the significant risk of corneal perforation and vision loss despite aggressive medical and surgical therapy.

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