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MD, FRCSC.

(See story on page 56 : *Contrast*)

“If you apply the current cataract surgical rate to the projected age distribution of our population, the number of cataract surgeries will at least double

United States, including trials from Denmark and the Netherlands.

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DALK explored as early approach to refractory *Acanthamoeba* keratitis

Procedure should be done by experienced surgeons with low rates of conversion to PK

By Lynda Charters; Reviewed by Enrica Sarnicola, MD

SIENA, ITALY ::

DEEP ANTERIOR LAMELLAR keratoplasty (DALK) should be considered as an early approach for treating refractory acanthamoeba keratitis with substantial corneal ulceration, said Enrica Sarnicola, MD.

“DALK is a safe procedure with good, long-term graft survival; that is, 99% after 10 years has been reported in the literature,” said Dr. Sarnicola, a resident in ophthalmology, Siena University, Italy. “The procedure has a low rejection rate with a low risk of secondary complications.”

Dr. Sarnicola and colleagues conducted a retrospective, noncomparative study of 12 eyes of 11 consecutive patients who had been diagnosed previously with *Acanthamoeba* keratitis. All patients had been followed for 2 years.

In these patients, the investigators performed a DALK procedure in 9 eyes with a post-infective stromal scar and in 3 eyes with active infection.

All 3 eyes with active infection were refractory to medical therapy. DALK, as a therapeutic approach, was performed from 30 to 60 days from the time of symptom onset.

All patients had extensive ulcers in the optical zone that exceeded 150 μm , but less than 300 μm in depth, according to Dr. Sarnicola.

The DALK technique they performed included either a cannula big-bubble technique or manual dissection. The DALK diameter was as large as possible; that is, 8.5 mm in 8 eyes and 9 mm in 4 eyes. Interrupted sutures were placed. A histologic examination was performed after the lamellar tissue was removed.

3 DRUGS USED

Patients used three drugs preoperatively and postoperatively: the antiseptic drug chlorhexidine gluconate, a DNA synthesis inhibitor propamidine isethionate, and a protein synthesis inhibitor neomycin sulfate.

Postoperatively, the drugs were instilled 4 times daily for 1 month. Propamidine isethionate was instilled 4 times daily for other 2 months.

“Most importantly, Descemet’s membrane

did not rupture in any eye,” Dr. Sarnicola said.

Visual recovery was very good, she pointed out. Best spectacle-corrected visual acuities ranged from 14/20 to 20/20 (average, 17/20). None of the infections recurred and no complications, such as secondary cataract or glaucoma, developed.

“The histopathologic evaluation confirmed our diagnoses with cysts in the stromal specimens,” she said.

The peripheral margin was free of infection in all cases. The deep margin was free of infection in eight cases, but not so in four cases. Dr. Sarnicola speculated that these four cases were all descemet DALK (dDALK).

“We believe this is the reason why the surgery was still radical,” she said.

DALK seems to be a very good procedure in eyes with active and quiescent acanthamoeba infection, she said. However, she noted the importance of a larger study to confirm the success rate with the procedure and to determine any possible late complications.

CASE REPORTS

Dr. Sarnicola recounted the case of a 61-year-old man with acanthamoeba keratitis who was misdiagnosed as bacterial. Delayed anti-amoebic therapy was unable to prevent and avoid infection progression and corneal melting, so therapeutic keratoplasty was indicated.

“Usually, surgeons prefer to perform keratoplasty when the infection is controlled, because with penetrating keratoplasty, opening of the anterior chamber can allow intraocular spread of infection,” she said.

“In addition, using a graft with a large diameter in the presence of inflammation in the eye carries a very high risk of rejection and graft failure,” she said. “Therefore, delaying the surgery is the last option.”

By the time the surgery was performed, the full corneal thickness had become infected. Five days postoperatively, endophthal-

mitis developed, which required vitrectomy. One month later, a fungal keratitis infection required a second penetrating keratoplasty. However, the graft was rejected, and a retinal detachment developed in addition to secondary glaucoma, limbal deficiency, and perforation. Ultimately, the eye was enucleated, Dr. Sarnicola said.

In another case, a 15-year-old girl who wore contact lenses was diagnosed late with biopsy-confirmed acanthamoeba keratitis. She was treated with targeted therapy that included topical polyhexamethylene biguanide, hexamidine, and chlorhexidine.

However, despite treatment the lesion enlarged, and intense pannus and deep stromal vascularization developed. The vision decreased to counting fingers.

Therapeutic DALK was performed early using the big-bubble technique. A 9-mm graft was applied centered on the infection.

“One year postoperatively, the visual recovery was good at 20/30,” Dr. Sarnicola said. “The acanthamoeba keratitis did not recur. The endothelial cell count is good and stable.”

In acanthamoeba infections, an early DALK procedure must be considered in cases of acanthamoeba keratitis refractory to medical therapy with substantial optical zone ulceration, she noted.

“The only caveat is that the procedure should be performed by highly experienced surgeons with low rates of conversion to penetrating keratoplasty,” Dr. Sarnicola said. ■

take-home

► Therapeutic deep anterior lamellar keratoplasty performed early should be considered in cases of acanthamoeba keratitis refractory to medical therapy with substantial optical zone ulceration.

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This article was adapted from Dr. Sarnicola’s presentation at the 2014 meeting of the American Academy of Ophthalmology. Dr. Sarnicola has no financial interest in any aspect of this report.