Corneal melt – a rare and unexplained complication of surface ablations?

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in Athens

REFRACTIVE surgeons should keep an eye out for early signs of corneal melt in patients who have undergone surface ablations. Though extremely rare, the complication appears to result from postoperative topical medication and can have devastating consequences, said Timo Tervo MD, Helsinki University Eye Hospital, Helsinki, Finland.

Speaking at the Cornea Day at the 11th Winter Inter Refractive Meeting of the ESCRS, Dr Tervo noted that if the causative agent is withdrawn in time, most eyes with corneal melt will have a good outcome. Otherwise, corneal perforation may occur within a matter of days, he said.

It is as yet unclear what causes the complication, but topical NSAIDs, steroids and antibiotics have all been implicated. Reports in the literature indicate that the complication will sometimes occur as a result of overuse of a prescribed NSAID, as in a case described by Mian et al (Cornea 2006;25:232-234) where a patient used ketorolac tromethamine every hour and within five days developed a corneal perforation requiring penetrating keratoplasty.

The complication has also been reported when the surgeon switches from the NSAID they commonly prescribe to a new or different agent. For example, Hargrave et al (Ophthalmology 2002;109:343-50) reported that after 1500 uneventful PRKs, two out of 27 patients developed corneal melt when they received a regimen of ketorolac instead of the previous diclofenac.

DR Tervo noted that although this type of melt is very rare he now no longer prescribes NSAIDs to patients after PRK and LASIK.

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The patients lost up to 100 microns in corneal thickness in the early postoperative period, although their corneas recovered near normal thickness in most cases and continued to improve over time. Furthermore, most had better corrected and uncorrected visual acuity than they had pre-operatively, he noted.

“Most patients seem to recover if the therapy is swiftly interrupted. This recovery of the corneal thickness may take six months or more,” he noted.

One of the patients who underwent PRK had a pre-operative refraction of -4.25 D and after a follow-up of 67 days refractive error was +1.75 D sphere and -1.50 of cylinder. Postoperative visual acuity improved from counting fingers pre-operatively to 1.0 at most recent follow-up, however, the patient’s BCVA worsened slightly from 1.5 to 1.2.

Another PRK-treated patient had a pre-operative refraction of +0.75 D and a postoperative refraction of +1.0 D with -1.0 D of cylinder. That patient's UCVA and BCVA were the same as pre-operative values at 0.6 and 1.0 respectively.

The third patient had a nearly ideal outcome with refraction improving from -1.5 D to +0.5 D with -0.5 D of cylinder and postoperative UCVA and BCVA of 1.0, compared to respective pre-operative values of 0.3 and 1.0. The fourth patient was similar to the first patient in having a substantial postoperative refractive error (+1.75 D of sphere and -1.50 of cylinder) but greatly improved UCVA (0.6 vs. counting fingers) and slightly diminished BCVA (1.0 vs. 1.2).

TRervo noted that although this type of melt is very rare he now no longer prescribes NSAIDs to patients after PRK and LASIK.

“Intra-operative use may be safe but is probably not necessary. It’s important to watch for the other drugs as well, as unknown interactions may exist.”

In addition, fluoroquinolones cannot be ruled out as a possible factor since they were also used in the cases reported. Moreover, fluoroquinolones have been reported to show corneal cell toxicity in tissue culture.

“A actually we don’t know what causes corneal melts in these cases, it could be a combination of agents plus an epithelial defect and maybe the bandage contact lens.