

Letters to the editor

Corneal abrasion after the wake-up test in spinal surgery

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To the editor: Ophthalmic complications such as visual loss, eye injuries, and corneal abrasion have been reported to occur, although rarely, during anesthesia. To prevent the eye from drying during general anesthesia, eye tape or ophthalmic ointment often is applied to the eyes. We encountered corneal abrasion that presumably occurred after the wake-up test for spine surgery in a patient using eye tapes during anesthesia.

A 15-year-old girl (height 153 cm, weight 50 kg) with idiopathic thoracic scoliosis underwent anterior instrumentation surgery of the spine in the left lateral position on Monday morning. Her eyes were closed with tape immediately after an easy endotracheal intubation. Anesthesia was maintained with epidural anesthesia, propofol, nitrous oxide, and intermittent i.v. fentanyl using a neuromuscular blockade monitor. We checked her pupils several times during anesthesia before the wake-up test. Six hours after the induction of general anesthesia, propofol and nitrous oxide were discontinued and we performed the wake-up test to confirm neurologic integrity. The patient was able to move both hands, but we did not confirm whether she opened her eyes. The recovery from anesthesia was smooth, and she could move her extremities on command. The surgery was finished within the next 3 h after the wake-up test, and we did not check her pupils during this period. After extubation of a tracheal tube in place, the patient responded well to commands, and she complained of severe pain in her right eye (upper side of the lateral position) and could not open the eye because of pain. We consulted an ophthalmologist, who found that her right eye had corneal abrasion, although her left eye was intact. Her right eye recovered uneventfully with the use of eye instillation solution and eye ointment, and she left the intensive care unit the next day as planned.

Eye injuries after anesthesia for nonocular surgery are uncommon, but when they occur, patients complain of pain and/or discomfort. Corneal abrasion is the most common compli-

cation of such eye injury [1]. The cause of corneal abrasion during anesthesia is related to loss of pain perception, obtundation of protective corneal reflexes, decreased tear protection, dripping of chemical solutions into the eyes, and brushing of surgical drapes against the eyes. Because of these risks, intraoperative eye protection with tape or eye ointment has been recommended [2,3]. To assess whether our patients, especially those who have received light general anesthesia combined with epidural anesthesia and a muscle relaxant, are well anesthetized, we routinely check their pupils to assess the level of anesthesia. In the present patient, we protected her eyes with tape; however, after the wake-up test, we did not check her eyes. At the wake-up test, she might have opened her eyes, and it is possible that the tapes then may have become too loose to protect her right eye against drying. While performing direct laryngoscopy, we did not wear identification cards clipped to the vest pocket or waterproof watches, which might cause eye injuries [4]. The use of the lateral position and the length of the surgical procedure, which is perfunctory especially on Monday, have been reported as risk factors for eye injury during anesthesia [1]. Since the frequency of corneal abrasion or ulcer has been reported to be extremely low (0.17%) [5], we hesitated to use a surgical drape, which involves some cost, or eye ointments, which would carry some risk of eye damage [6], congestion, and inflammation. Pupillary responses during anesthesia are well known to be a reliable monitor of the depth of anesthesia [7,8], especially during light general anesthesia combined with regional anesthesia [7]. Our experience suggests the use of some more effective method than tape to protect the patient's eyes, but complete protection of the eyes with surgical drape or eyepads immediately after the induction of general anesthesia would hamper us from checking the changes in pupil size associated with potential stimuli during anesthesia. We should reconfirm the placement of eye tape or retape the eyes to protect against drying during general anesthesia after the wake-up test.

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