PHOTO QUIZ

A red eye on the intensive care unit

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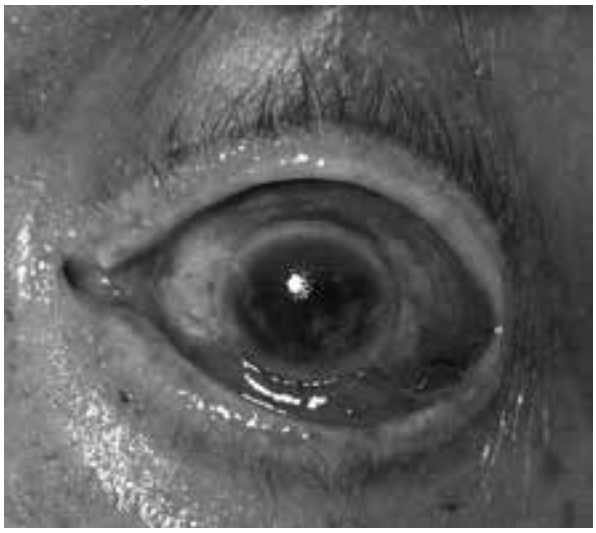
CASE REPORT

A 82-year-old man was admitted to the Intensive Care Unit (ICU) because of respiratory insufficiency. He was intubated, mechanically ventilated and resuscitated with large amounts of fluids. Because of chronic corticosteroid usage (prednisone 5 mg three times a day) for rheumatoid arthritis, a *Pneumocystis jirovecii* pneumonia (PJP) was suspected and treatment with high-dose trimethoprim-sulfamethoxazole (TMP-SMX) (1920 mg three times a day) and prednisone (40 mg twice a day) was initiated. A bronchoalveolar lavage (BAL) was performed and polymerase chain reaction (PCR) for PJP was positive. On the 12th day a red eye was observed (*figure 1*).

Figure 1. *The left eye on day 12: local conjunctival oedema, hyperaemia, subconjunctval bleeding, and local opacification of the cornea*



WHAT IS YOUR DIAGNOSIS?

See page 207 for the answer to this photo quiz.

ANSWER TO PHOTO QUIZ (PAGE 204)

A RED EYE ON THE INTENSIVE CARE UNIT

DIAGNOSIS

The ophthalmologist was consulted and examination revealed incomplete eyelid closure (lagophthalmos), conjunctival oedema (chemosis) and subconjunctival bleeding. Diagnosis was exposure keratopathy with corneal abrasion secondary to lagophthalmos due to chemosis. The differential diagnosis was broad and included peripheral ulcerative keratitis in the context of a flare of his rheumatoid disease and microbial/viral keratitis among others. The first seemed less likely because the patient received high-dose corticosteroids and examination did not reveal any signs of vasculitis or specific infectious symptoms such as dendritic lesions in the corneal epithelium due to a *Herpes* infection.

The patient was treated with chloramphenicol 0,5% eye drops four times daily for seven days, oculentum simplex and application of a moisture chamber. During his ICU stay the condition of his eyes improved and when he recovered he turned out to have clear sight.

DISCUSSION

Ocular disorders most prevalent in ICU patients are chemosis (9% to 80%) and exposure keratopathy (3.6% to 60%). There are multiple reasons for critically ill patients to develop chemosis, e.g. fluid overload, increased capillary permeability, low plasma oncotic pressure and compromised venous return from the ocular region due to positive pressure ventilation. Furthermore, sedation compromises protective eye reflexes and masks ophthalmological symptoms such as pain. Lagophthalmos, frequently caused by chemosis, may lead to ocular surface desiccation and corneal abrasion.

Early diagnosis and treatment can be crucial, since exposure keratopathy may progress to microbial keratitis, corneal ulceration, perforation, scar formation and eventually permanent visual loss. When awake, vision loss and pain in the eyes cause discomfort and are a risk factor for delirium, associated with adverse outcome. Moreover, good sight highly contributes to the quality of life in the long term.

Exposure keratopathy and its complications can be prevented by using simple protocols. In the literature a variety of protective techniques are mentioned, all achieving adequate closure or covering of the eyes to maintain corneal moisture. Although no statistically significant difference is reported between the different preventive measures, application of polyethylene covers or moisture chambers together with lubricating ointments seem to be most effective. However, unfortunately, this is not common practice in most ICUs .

Previously, each mechanically ventilated patient in our ICU was treated with 1 drop hypromellose 0.3% every four hours together with 30-45 degrees elevation of the head of the bed. Because of this case we reviewed the literature and introduced a protocol which included frequent ocular examination by nurses, the use of ocular gels instead of hypromellose drops for sedated patients and mechanical closure of the eyes in case of lagophthalmos.

In conclusion, the patient's eyes are easily overlooked on the ICU, while simple measures can prevent serious complications.

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