ANAPHYLACTIC SHOCK AFTER FLUORESCEIN STAINING CORNEAL ABRASION. A CASE REPORT

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ABSTRACT

A 34-year-old Lebanese man presented with photophobia, tearing, and reduced vision in the left eye, a few hours after being accidentally hit in the eye with a fingernail. The cornea in the left eye showed corneal defect . About three minutes after receiving topical fluorescein in this eye, the patient developed syncope and anaphylactic shock. After immediate reanimation, the patient regained consciousness. When specifically asked, he reported a three-month history of urticaria to the right side of his neck and nose. The possible pathophysiology involves an underlying IgE-mediated mechanism.
Ophthalmologists should be aware of complications associated with topical fluorescein

KEYWORDS

corneal abrasion; topical fluorescein; staining; anaphylactic shock

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Sodium fluorescein has been widely used for decades, It has been used intravenously for the examination of the vasculature of the ocular fundus (fluorescein angiography) and as eye drops for diagnosis of corneal erosions [1]. Adverse reactions after intravenous use are well documented but the underlying mechanism is still uncertain [1]. A systematic Pubmed search on topical fuorescein and side effects for the years 1966 to 2008, however, showed no cases of serious adverse events after topical application.We report on a case of anaphylactic shock after topical administration of fluorescein for diagnosing a possible corneal abrasion.

CASE REPORT

A 34-year-old Lebanese man presented at our private eye clinic in May 2009 with pain, photophobia, tearing, and decreased vision in the left eye that had appeared a few hours after accidentally being hit with a fingernail by his child in the eye. There was no previous history of ocular trauma, surgery, or ophthalmic disorders, and the visual acuity had always been excellent in both eyes. His visual acuity was 20/20 in the right eye and 20/50 in the left eye. Slit lamp examination of the left eye revealed mild lid swelling and hyperemia of conjunctival vessels. The cornea in the left eye showed corneal defect (epithelial lesions) involving the inferior half (figure 1) with folds in the Descemet membrane and mild edema in the corneal stroma; the anterior chamber was quiet. Examination of the right eye was unremarkable. Two drops of fluorescein (Minims Natriumfluorescein 2%, N.V. Chauvin Benelux, SA) were administered to stain the corneal defect in the left eye. About three minutes after having received two drops

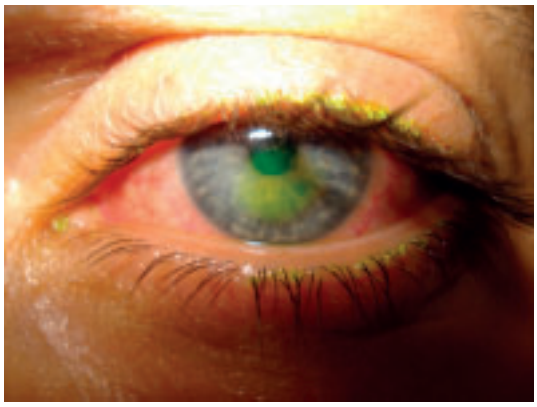


Fig. 1: Large corneal abrasion stained with fluorescein).

of fluorescein, the patient became diaphoretic and pale, developed nausea, sweating, shivering, weakness, dizziness, syncope, apnea and anaphylactic shock. After immediate reanimation (with corticoids, *adrenaline* and artificial reanimation), the symptoms resolved and the patient regained consciousness. Fortunately, he recovered without any neurologic sequelae. When the patient was specifically questioned, he reported a history of urticaria to the right side of his neck and nose that had developed three months previously (figure 2). He mentioned no previous sodium fluorescein angiography and no radioconstract media injection. The patient was started 1% terramycine and 0.3% ciprofloxacin ointment 2 times a day combined with 1% atropine drops once a day and 0.5% ketorolac three times a day, and the eye was patched.

No additional problems occurred after the patient left the eye clinic. Examination on the next day revealed a small inferior corneal abrasion. Topical medications were continued. Four days later, the corneal epithelium had healed. After one month of topical antibacterial therapy, the cornea was clear. His best-corrected visual acuity at this time was 20/20 in the left eye. Diagnosis of urticaria was confirmed by dermatologists.

Anaphylaxis is a rare, but serious, form of drug hypersensitivity. It is a systemic reaction mediated by vasoactive amines released from mast cells and basophils sensitized by immunoglobulin E (IgE). Immediate hypersentivity reactions commonly involve at least two of the following major organ systems: cutaneous (generalized hives, pruritus, swollen lips-tongue-uvula), cardiovascular (hypotension), respiratory (dyspnea due to laryngeal edema, bronchospasm, stridor), and gastrointestinal (vomiting, diarrhea, abdominal cramps [2]. Individuals differ in the time of appearance of symptoms and signs, but the hallmark of an anaphylactic reaction is the onset of some manifestations within seconds to minutes after introduction of the antigen. Diagnosis of an acute anaphylaxis episode is based on pattern recognition, specifically characteristic symptoms and signs occurring minutes to hours after a relevant exposure or event [3]. Laboratory tests (histamine levels, total tryptase levels, or both) may confirm or not the clinical diagnosis of anaphylaxis; the history always trumps the test results. The differential diagnosis of anaphylaxis consists of a long list of diseases [3]. Common diagnostic dilemmas involve acute generalized hives, acute asthma, syncope, and panic attack [3]. Diagnosis and management are challenging because reactions may be quick, often unexpected and severe, and there is no single test to diagnose anaphylaxis in routine clinical practice [4, 5].

In wide dialy use for over 40 years, fluorescein dye is a common diagnostic technique used in the study, the understanding, and the treatment of ocular disease [1]. Topical fluorescein application is a routine component of the oph-



Fig. 2: Urticaria on the right side of the neck.

thalmic examination. Instillation of 2.0% solution or application of fluorescein from an impregnated paper strip is used in the diagnosis of external corneal disorders, determination of intraocular pressure by applanation tonometry, and identification of lacrimal system obstruction. It is considered as being a safe procedure. Almost all patients with ocular problems are exposed to fluorescein, in topical form, during routine ocular examination. However, the report of adverse reactions had been very rare [6-9].

The existence of a history of allergy increases the risk of adverse reactions to fluorescein [1]. The possible pathophysiology of the reaction observed in our patient involves an underlying IgE-mediated mechanism in a susceptible individual. Ophthalmologists should be aware of this possible complications associated with topical fluorescein use and be prepared to manage adverse reactions.

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