



Syncope during Insertion of Contact Lens Trial

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Abstract

Contact lenses (CLs) are now more frequently preferred than glasses especially by people of younger age groups. It is mainly because it provides them with more realistic vision and better aesthetic appearance. Here, at our Contact lens trial center, we report two young normal patients who had syncopal attack during insertion of the contact lens trial. Both had few minutes of unconsciousness. Rapid response medical team was alerted. On examination, hypotension and bradycardia was found in both of them. They were made to lie down flat and in a couple of minutes they regained consciousness. They were advised to take oral fluids, reassured and allayed anxiety. After, two hours, contact lens trial was inserted uneventfully. The probable various causes like vasovagal and oculocardiac reflex, their mechanism for this syncopal attack, management and steps to be followed for prevention of such attacks are discussed in the case report.

Keywords: Contact Lens; Syncope; Oculocardiac Reflex; Vasovagal

Abbreviations

CLs: Contact Lenses; MAP: Mean Arterial Blood Pressure; OCR: Oculocardiac Reflex; TCR: Trigemino-cardiac Reflex.

Introduction

Contact lenses (CLs) are now more frequently preferred than glasses especially by people of younger age groups. It is mainly because it provides them with more realistic vision and better aesthetic appearance. Contact lens trial is done as an outpatient procedure, usually uneventful with the patient in the sitting posture. At our Contact lens trial, we report two young patients who had syncopal attack during insertion. Both patients neither had history of any systemic co morbidities nor history of syncopal attacks before. In this case report, authors describe in detail about the adverse

event happened, possible causes and its mechanism involved, management, corrective and preventive actions to prevent such events from happening in future.

Case Reports

Case 1

A 23-year-old young male patient was planned for contact lens trial for vision correction. He was diagnosed with amblyopia in his left eye and rest of the ocular findings were otherwise normal. His best-corrected visual acuity was 20/20 with -1.00 diopters sphere in his right eye and 20/200 with +2.00 diopters sphere in his left eye. The patient was anxious and tightly closing his eyelids. The optometrist, kept opened his eyelid and inserted a soft contact lens into his left eye with little force. Suddenly, he became dizzy and was about to faint.

The contact lens was quickly removed, and he was made to lie down flat in the couch nearby. Hospital Rapid response team was alerted. The team arrived with emergency crash cart. On systemic examination, it was found that his pulse was around 35/min, blood pressure was about 70/38 mmHg, random blood sugar around 133 mg/dl and pulse oximetry showed oxygen saturation around 96-97% in room air. Within few minutes, patient regained consciousness. He was reassured. 12 lead chest electrocardiogram was taken and it was found to be normal. Gradually, his vitals returned to normal limits.

Case 2

A 20-year-old young female was planned for a prosthetic contact lens trial for her left eye. Her ocular history included a wooden stick injury to the left eye five years ago, leading to a diagnosis of ectropion uvea, a complicated cataract, and total retinal detachment. She was informed that her visual potential was nil and was referred for a prosthetic contact lens. At presentation, the patient's best-corrected visual acuity was 20/20 in her right eye, with no perception of light in her left eye. Desperate for cosmetic options, she was referred for a contact lens trial. She had never used contact lenses before. Preliminary examination and explanation about procedure was done clearly. As soon as the contact lens was placed on her eye by holding the eyelid, she experienced dizziness, nausea, and fainted down. She was made to lie down flat and the contact lens was immediately removed. Hospital rapid response medical team was alerted. On examination, her pulse rate was around 38/min, blood pressure of 80/64 mmHg and pulse oximetry revealed oxygen saturation around 95-98% in room air. After around five minutes of rest, her vitals returned to normal limits. 12 lead electrocardiogram was taken and it was found to be normal.

Discussion

Mimura et al reported vasovagal syncope during contact lens trial in a 16 year old boy with history of needle phobia. In our case report, both patients did not have any history of phobias before. Both were found to be little anxious and concerned about the procedure involved. For the first patient, unintentional little force was applied as he was having hyperactive blinking reflex, whereas for the second patient, contact lens trial was inserted normally neither with manipulation nor with any difficulty [1].

The causes for the syncope might be due to vasovagal or oculocardiac reflex. Vasovagal syncope has an reflex arc, with the afferent limb of the arc begins with a trigger. This trigger can be in the form of any unusual pain or stress or anxiety induced and combined with central hypovolemia

due to sitting upright posture leading to increased cardiac contraction with relatively underfilled left-ventricle. This in-turn stimulates mechanoreceptors in the ventricle that transmit signal to the central nervous system through vagus nerve, which acts as the efferent limb of the reflex arc [2]. Increased parasympathetic activity leads to decrease in the heart rate, while decreased sympathetic activity leads to arteriolar and venules dilation, leading to decrease in venous return and ventricular volume. Mean arterial blood pressure (MAP) drops. Autoregulatory mechanism of the cerebral blood flow helps to maintain a constant cerebral blood flow over a wide range of MAP. But, as the MAP, decreases below a threshold value, cerebral blood flow decreases and patient's feel dizzy and become to lose consciousness. So, in such situations, if the patient is made to lie down flat and/or combined with feet elevation, then the blood begins to flows from the lower extremities to the brain. Thus, cerebral blood flow is established and gradually patients regain consciousness and they get to feel better.

The second probable cause for the syncope is oculocardiac reflex (OCR) or trigeminocardiac reflex (TCR). The afferent tracts are derived mainly from the ophthalmic division of the trigeminal nerve. These afferents synapse with the visceral motor nucleus of the vagus nerve, located in the reticular formation of the brain stem. The efferent portion is carried by the vagus nerve from the cardiovascular center of the medulla to the heart. When an eye is compressed, stimulation is transmitted via the trigeminal nerve (the afferent limb) to the vagus nerve (the efferent limb). The most common cardiac response to these stimuli is bradycardia. Vagus nerve stimulation causes vasodilation and pooling of blood in the capillary beds, which leads the blood pressure to fall. Once the blood pressure decreases significantly and if the patient is upright posture then similar to the above mechanism, syncope occurs.

This reflex sets is most often encountered during squint surgery in paediatric age group due to stretching of the extraocular muscle. In clinical practice it can also occur during the repair of a detached retina [3], especially during tagging of extraocular muscles, enucleation of eye [4], intraorbital injection of local anaesthetics, following digital pressure to the eye, pinching of the conjunctiva with forceps and post-operative ocular pressure due to bandage [5], repair of nasal fracture under general anaesthesia [6], and by stimulation of eyelids (blepharocardiac reflex) [7], face and oral cavity. Arnold reported OCR during insertion of contact lens [8].

Management of such syncopal attack includes enable patients to lie down flat, with feet elevated, check for vital signs (blood pressure, heart rate and arterial oxygen saturation level), reassurance and check for oral responsiveness, if not

then rapid response team should be alerted. If syncope still persisting then 12 lead ECG can be done to rule out any heart disease and blood sugar level can be checked to rule out hypoglycaemic attack.

To prevent syncopal attacks during insertion of contact lens trial following strategies can be adopted.

- Patient should be clearly explained about the procedure involved preferably a video showing the insertion of contact lens to be shown before contact lens trial.
- History of phobic or panic attack should be elicited. If there is any history, then contact lens insertion must be done more gently preferably in semi-reclined posture.
- It is safer to approach the eyes from below rather than directly [9].
- In an institutional or hospital set up, a rapid response team with necessary monitors, emergency crash cart should be made available if any such adverse event happens.

Conclusion

As practitioners, it is crucial for us to recognize patients who are vulnerable to get syncopal attacks during insertion of contact lens and necessary precautions must be taken. Patients experiencing syncope can be effectively managed with by making them lie down supine with legs elevated for 5-10 minutes, reassurance, and adequate oral fluid intake. Additionally, clear counseling to help the patient feel comfortable and relaxed, or using a special appliance for contact lens insertion, can be beneficial for patients with phobias.

Conflict of Interest

No conflict-of-interest present.

Patient Consent

Proper patient consent is taken before submitting this case report.

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