

Contact Lens-related Complications

Ashwaq Y. Asiri, Atheer Eed Alotaibi , Yara Mofarrah Assiri , Bayan Sultan Aljobran,
Wafa Daifallah Alshehri

Medical students - King Khalid University

ABSTRACT

Aim of the work: the contact lenses are widely used for management of refractive errors and cosmetic purposes as well. Their complications are rare and usually caused by in appropriate maintenance of the lens and bad habits for wearing too long. **Methodology:** all the English data related to the subjects were collected after reviewing Pubmed, SCOPUS, ScienceDirect and other search engines. **Results:** this review showed the most common complications, risk factors and management of diseases related to contact lens wearing. Each problem was described by its symptoms, risk factors and management as well as prognosis. **Conclusion:** the selection of proper lens and education about the lens care system is efficient for reducing the complications related to contact lens.

Keywords: contact lens, complications, discomfort, ulcer, dryness, keratitis.

INTRODUCTION

Contact lens have been commonly used for management of refractive errors or cosmetic purposes⁽¹⁾. Contact lenses resemble a profitable industry which is growing by 6.7% every year and are expected to reach about 12,476.3 million US dollars by the year 2020^(2, 3). The prescription of contact lenses is based on management of the simple or massive errors that can't be managed using eyeglasses including irregular cornea, anisometropia, and keratoconus⁽⁴⁻⁶⁾. Also, they can be used for treatment of epithelial defect, dry eye of Sjogren or Stevens-Johnson syndrome as well as post refractive surgery rehabilitation⁽⁷⁻⁹⁾. Furthermore, the contact lens could lessen the activities restrictions, improve the life quality and provide better appearance⁽¹⁰⁾. But, they can cause many complications that could cause disappointment for the patients that could force them to choose other possible modalities⁽¹¹⁾.

This review provided an important issue related to contact lens complications and how to manage them properly.

Complications of contact lens

- Discomfort of contact lens:

The contact lens discomfort is defined as intermittent or continuous sensation from wearing lens that could be associated with visual disturbance or ocular surface staining or conjunctival hyperemia^(12, 13). This discomfort is caused by decreased compatibility between the eye and the contact lens thus could result in cessation of wearing contact lens or at least lessening the wearing time or even cessation of contact lens wear⁽¹⁴⁾.

Two factors are associated with increasing the incidence of contact lens discomfort including

environmental factors and contact lens related factors. The environmental factors include humidity, high or cold temperature, dry eye, computer usage, light and medications^(15, 16). The causes related to contact lens are the design of the lens, wearing times, material including water content and lubricity of the lens⁽¹⁷⁾. The management is based on providing comfortable daily wearing time and using lens care system or using daily disposable lens and lubricating drops^(18, 19).

- Contact Lens-related ulcer

Peripheral ulcer:

This type is categorized by excavation and infiltration of the epithelium with intact Bowman layer which is different from corneal ulcers and they could be differentiated using clinical features. It is associated with injection of the conjunctiva, focal infiltration located at the peripheral cornea⁽²⁰⁾. It is more common with bacterial toxins and inflammatory diseases and is significantly associated with extended wear lenses especially silicone hydrogel lenses^(21, 22). The management could spontaneously regress after discontinuation of contact lens wearing⁽²³⁾.

- Keratitis

Microbial Keratitis

It is an active inflammation of the cornea that associated with viruses, bacteria or even parasites caused by contact lens wear⁽²⁴⁾. Also, contamination, trauma and hypoxia are risk factors for microbial keratitis^(25, 26).

Proper lens care could prevent infectious keratitis, while other severe types that cause corneal perforation or scleritis can be managed either with medical treatments or surgical management^(27, 28).

Acanthamoeba Keratitis

It is an infection of the eye principally caused by protozoa from contaminated lens that could threaten

the cornea^(29,30). Proper corneal scan and microbiology of isolates are recommended for diagnosis of the disease. The treatment begins with topical antimicrobial agents and could be combined with another therapy for resistant types followed by surgical interventions if the treatment fails^(31,32).

- Corneal Neovascularization

This means development of new vessels that could be found in capillaries and venules of the pericorneal plexus that can expand to the corneal stroma⁽³³⁾. The material of the lens could enhance the development of neovascularization inside the cornea as well as hypoxia mechanical trauma. Also, herpes simplex keratitis and transplantation of the cornea could induce these phenomena⁽³⁴⁾. Using contact lens which is more permeable to oxygen and decreasing the wearing time⁽³⁵⁾. Using anti-inflammatory agents as well as angiogenic therapy could decrease the severity of the disease⁽³⁶⁾. Also, using laser, stem cell transplant and other surgical interventions are recommended for severe cases^(37,38).

- Giant Papillary Conjunctivitis

It is called induced papillary conjunctivitis that has several adverse effects on those wearing lenses including redness, irritation and increasing rates of itching and movement of the lens as well as increased mucous discharge associated with hyperemic reaction⁽³⁹⁾. This irritation occurs mostly in case of mechanical trauma and when using soft lens in comparison with rigid contact lens^(40,41). The management of the problem during early stages could prevent the dropping out of the lens. Also, using lubricants and lens care recommendation could resolve the problem in early stages^(42,43).

The study was done after approval of ethical board of King Khalid university.

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