Use of Povidone Iodine in the Management of Epidemic Keratoconjunctivitis

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Introduction

Epidemic keratoconjunctivitis (EKC) is a highly contagious viral conjunctivitis caused by a group of viruses known as adenoviruses. Adenovirus serotypes 8, 19 and 37 are often associated with EKC. Family of adenoviruses contain different serotypes that can also cause pharyngoconjunctival fever, non-specific sporadic follicular conjunctivitis and chronic papillary conjunctivitis. EKC is reported worldwide and has a tendency to occur in epidemics. EKC may occur in crowded living conditions and places where people come into contact with one another, such as schools and medical practices [1-3]. Transmission of the virus occurs by direct contact through ocular and respiratory secretions or by indirect contact with contaminated instruments or solutions [1]. The dilemma with a virus such as EKC is that patients who have contracted the disease are asymptomatic during the incubation period and may inadvertently spread the virus [4]. The fact remains that EKC is highly contagious [4]. The period of communicability is from late in the incubation phase up to 14 days after the onset of the disease.

Discussion

EKC is an ocular surface infection associated with a marked inflammatory reaction, and symptoms of redness, irritation, tearing, blurry vision and sensitivity to light [5]. Development of keratitis (corneal inflammation) distinguishes EKC from other forms of conjunctivitis and it usually arises after fourth day of initial onset of symptoms. Corneal involvement ranges from diffuse, fine superficial keratitis to epithelial defects to sub-epithelial infiltrates. Sub-epithelial infiltrates can persist for years, which may cause glare and reduction in visual acuity.

Accurate diagnosis of EKC upon presentation is essential [1]. Misdiagnosis can lead to inaccurate patient expectations for resolution, as well as, a lack of patient education on appropriate disinfection precautions. Preventing the spread of EKC may be the most proactive way of treating it [1]. The patient should be aware that EKC is easily transmitted by contact with an inert surface, such as a door handle, and to avoid rubbing eyes and then touching anything [4]. Frequent hand washing should be implemented and infected patients should not share towels or cosmetics [6].

The clinical diagnosis of an adenovirus infection is typically made based on the history and presenting signs and symptoms [3]. In reality, it may initially be difficult to clinically distinguish some viral conjunctivitis from bacterial conjunctivitis [1,3]. The traditional gold standard for diagnosis of EKC or any adenovirus conjunctivitis has been cell culture in combination with immunofluorescence staining (CC-IFA) [1,3]. Other laboratory diagnostic methods used to identify adenoviral infections include serologic methods, antigen detection and polymerase chain reaction (PCR). Sambursky., et al. report the introduction of the Rapid Pathogen Screening (RPS) Adeno Detector which is described as a rapid point-of-care diagnostic test for the visual, qualitative in vitro detection of adenoviral antigens directly from human eye fluid [3].

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Despite the fact that EKC is a self-limiting disease, most affected individuals seek and receive treatment as a result of the severity of their symptoms [7]. The treatment of EKC often includes palliative treatment, such as cool compresses and artificial tears [8]. In various instances, EKC treatment has also consisted of topical antibiotics, topical nonsteroidal anti-inflammatory drugs (NSAIDs) and topical corticosteroids [5,8]. Hence the management of EKC is a challenge and remains one of the most important disease with ocular morbidity. Overuse of antibiotics has led to antibiotic resistance and use of steroids has increased the replication of the virus. Different studies now are trying to use Povidone iodine for treatment of EKC patients because antivirals are not easily available and the cost of drugs is high. Diagnostic investigative facilities to detect adenovirus are difficult and not available easily.

Povidone-iodine (PVP-I), with its broad antimicrobial spectrum and low cost, has been found in many studies to be useful in achieving quick resolution of some viral and bacterial conjunctivitis. Povidone iodine ophthalmic solution has been proven effective before (5% solution) and after ocular surgery (1.25%), at birth (2.5%), and for some forms of conjunctivitis (1.25%). It has a very broad antimicrobial spectrum, including bacteria, viruses, and fungi, given enough contact time in vitro. Resistance by bacteria is also rare. Povidone iodine 5% has been used pre-operatively for preventing Endophthalmitis, in ophthalmic neonatorum and trials have been done in conjunctivitis. Clinical Trials for its use in treating other types of ophthalmic infections are continuing.

R Pinto, et al. conducted a randomized, masked and controlled trial. One-hundred twenty-two patients with a clinical diagnosis of presumed viral conjunctivitis were randomized to either the treatment group or the control group. Physicians and patients were masked to the treatment. Swabs were taken from the conjunctival fornix for adenovirus PCR analyses. Patients in the treatment group received topical dexamethasone 0.1%/povidone-iodine 0.4% eye drops four times daily, and patients in the placebo group received artificial tears four times daily, both for seven days. Symptoms were recorded on the day of recruitment and at the time of a follow-up examination 5, 10 and 30 d later. The main outcome was duration of the disease. The other outcomes were overall discomfort, itching, foreign body sensation, tearing, redness, eyelid swelling, side effects of the eye drops, intraocular pressure and the incidence of subepithelial corneal infiltrates. The use of topical dexamethasone 0.1%/povidone-iodine 0.4% eye drops four times daily appeared to reduce the duration of conjunctivitis [9].

Pilot study conducted at our hospital on Efficacy of Povidone Iodine in EKC also showed statistically significant improvement in reduction of duration of disease and lesser number of patients showing corneal involvement after use of Povidone Iodine for EKC. The use of povidone-iodine in ophthalmic practice has shown to reduce the incidence of blindness in children and adults throughout the world. Hence, further larger randomized controlled trials need to under taken to treat this contagious disease with cheaper alternatives.

Bibliography


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