ORIGINAL ARTICLE

The effects of povidone iodine (pH 4.2) on patients with adenoviral conjunctivitis

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Abstract

Objective: To compare the efficacy of classical treatment and povidone-iodine treatment for adenoviral conjunctivitis.

Methods: This retrospective study was conducted at the Centre of Marmara Eye Health, Sakarya, Turkey, between January 2011 and February 2014, and comprised adult patients suffering from adenoviral conjunctivitis. The participants were randomly divided into two groups. Group I was given povidone-iodine solution while Group II was given the classical treatment and was taken as control.

Povidone-iodine treatment was administered as three drops three times per day. The classical treatment comprised three drops of trifluorothymidine three times per day. Treatment were continued for two weeks. The patients who had not recovered in this time frame were defined as 'late recovering' patients. SPSS 23 was used for data analysis.

Results: Of the 112 participants, there were 56(50%) in each group. In Group I, 54(96.4%) patients recovered in two weeks, while 2(3.6%) took more time. In Group II, 33(58.9%) patients recovered in two weeks while 23(41.1%) took more time ($p<0.001$). Overall, 92(82.1%) patients had familial transmission-contamination.

Conclusion: A new treatment protocol of povidone-iodine was used safely in patients with adenoviral conjunctivitis. Familial transmission was found very important to adenoviral conjunctivitis infection.

Keywords: Adenoviral conjunctivitis, Povidone-iodine, pH. (JPMA 66: 968; 2016)

Introduction

In recent years, the increase in the prevalence of adenoviral conjunctivitis is noteworthy.[1] For the treatment of patients with adenoviral conjunctivitis, various protocols and clinical trials are under way. Adenoviral conjunctivitis treatment still remains a challenge for clinicians despite achieving high standards of care. Unfortunately, there is no consensus on the treatment of adenoviral conjunctivitis. However, recently, many protocols have led to an improved understanding of the clinical status.[2,3]

Povidone-Iodine (PVI), easily accessible in pharmacies, is a microbicide solution that is sold in various forms. It is a broad-spectrum microbicide containing 2-pyrrolidinone, 1-ethenyl-, homopolymer compound with iodine.[4] Furthermore, PVI is a commercially available antiseptic with a long history of use in laboratory disinfection, general surgery and ophthalmology. Diluted PVI solutions are toxic for viruses, bacteria, parasites and fungi.[4] Previous studies have demonstrated that PVI is effective on active infections, endophthalmitis prophylaxis, before and after ocular surgery, and for the prevention of conjunctivitis. Additionally, PVI has been described in a number of reports as an effective treatment for acute viral conjunctivitis. Therefore, PVI maintains its importance.[5,6]

Patients and Methods

This retrospective study was conducted at the Centre of Marmara Eye Health, Sakarya, Turkey, between January 2011 and February 2014, and comprised adult patients suffering from adenoviral conjunctivitis.

The preparation and pH measurement of PVI (pH: 4.2, 0.5%) were made in the biochemistry laboratory (Hanna Instruments 2211 pH/Oxidation-reduction potential (ORP) meter, HANNA). The study was conducted according to the principles of the Declaration of Helsinki and was approved by the institutional ethics committee. Written consent was obtained from all the participants. Inclusion criteria comprised intense ocular discharge at the conjunctiva hyperaemia, hypertrophy of the conjunctiva flocculants, eye pricking and/or oedema in the eyes. Individuals having thyroid dysfunction (free triiodothyronine [T3]. free thyroxine [T4], thyroid-stimulating hormone [TSH]), those who were pregnant or lactating, diagnosed as having heart disease, or suffering from nodular catarrh were excluded.

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Patients were randomly divided into two groups: Group I was given PVI solution while Group II controls were given the classical treatment. PVI solution had 1 mL of Tears Naturale + 1 mL 0.5% PVI. The pH of PVI solution was 4.2. The PVI treatment was administered as three drops three times per day. The classical treatment was administered as three drops of trifluorothymidine (TFT) three times per day. The treatments were continued for two weeks. The patients who did not recover in this time frame were defined as late recovering patients.

For statistical comparison of the treatment results, chi-square and Fisher's exact tests were used. P<0.05 was considered significant. SPSS 23 was used for data analysis. In addition, the transmission of the illness was analysed by microbiology experts.

Results

Of the 112 participants, there were 56(50%) in each group. Of the total, 87(77.7%) patients recovered, whereas 25(22.3%) were 'late recovering'. In Group I, 54(96.4%) patients recovered in two weeks, while the recuperation of 2(3.6%) took more time. In Group II, 33(58.9%) patients recovered in two weeks, while the recuperation of 23(41.1%) of them took longr. Of all, 92(82.1%) patients had familial transmission-contamination.

Table: Comparison of Group I and Group II treatment.

The process	Treatment method		Total
	Group I (n=56)	Group II (n=56)	
Recovered	54 (96.4)	33 (58.9)	87
Late recovering	2 (3.6)	23 (41.1)	25
Total	56	56	112

Data was shown as n (%)

There was a statistically significant difference between the two groups (p<0.001) (Table).

Discussion

As discussed by Kaufman et al,[7] adenoviral conjunctivitis infection is common throughout the world and causes significant morbidity. To address this, new treatment protocols are being developed. However, a study found that ophthalmologists and optometrists are often guilty of spreading the adenovirus because it is highly contagious with serotypes with variable morphology.[7] This results in the indiscriminate use of antibiotics, which are expensive and have no value in treating a viral infection. The difficulty of accurate diagnosis also makes the use of newer proposed treatments less valuable and even potentially hazardous.

Pelletier et al.[8] investigated the preliminary efficacy of a novel ophthalmic suspension containing 0.4% PVI and 0.1% dexamethasone in the treatment of adenoviral conjunctivitis. The outcome of Pelletier et al.'s study was that the novel suspension may be a useful agent in the treatment of acute conjunctivitis. In our study, 0.5% PVI was used and did not contain dexamethasone. Additionally, it contained Tears Naturale with a pH 4.2 making the solution more stable.

Monnerat et al.[9] showed that adenoviral conjunctivitis causes high socioeconomic cost because it is highly contagious and, therefore, patients need to be quarantined. In our study, the familial infection rates were high. According to Dawson C et al,[10] their study of a family, typical opacities seen in epidemic conjunctivitis were observed in the wife and two baby-sitters. The disease had not spread to further contacts of the patient. This study was the first to report such a family outbreak of adenovirus infection in North America or Britain, though it is common in Japan. The most important aspect in common with all of these studies is transmission by the family.[10]

All studies indicate that, while we struggle with disease, scientists have yet to find a suitable solution for the problem of familial spread. Thus, we believe that the most important strategy in this regard is family education.

Conclusion

PVI was used safely in patients with adenoviral conjunctivitis. Furthermore, it led to complete remission without any side effects. Moreover, family education was a very important factor relating to the transmission of the adenoviral conjunctivitis infection.

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Conflict of Interest: No

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