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To Study the Role of Topical Antibiotics in Management of Acute Viral Conjunctivitis

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Abstract: ***Context: The role of topical antibiotics in the management of acute viral conjunctivitis is identified and the time taken to heal conjunctivitis in a group treated with antibiotics and a group which is treated without antibiotics is compared. Settings and Design: The present study is undertaken at ophthalmology out patient department at Shree Krishna hospital in the western province of India. The patients were further divided by computer based simple randomization into two groups, one group received artificial tears and cold compression while the other group received topical antibiotics (ofloxacin), artificial tears and cold compression. Methods and Material: It is an interventional study where response from both the groups are measured in terms of the decrease in the amount of conjunctival congestion, symptomatic relief and progression of disease like corneal involvement on the day of presentation and thereafter weekly observations are taken for a span of 5 weeks. Statistical analysis used: This is a qualitative categorical study and hence required Chi Square Test and independent sample t-test analysis. Results: In this study, all the signs of acute viral conjunctivitis in both the groups disappeared at the same time i.e. in group A by 18.7 days (+/-8.75 days) and in group B by 18.4days (+/-8.5 days) with p-value of 0.74. Conclusion: From the results of our study, it is recommended that patients with acute viral conjunctivitis should not be given topical antibiotics. Artificial tears and cold compression are to be prescribed to reduce the symptoms of acute viral conjunctivitis.***

Keywords: acute viral conjunctivitis, symptomatic relief, antibiotics

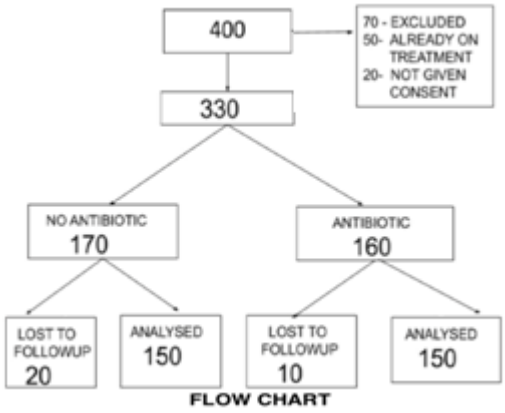
1. Introduction

Conjunctivitis is inflammation of the conjunctiva and is a common ocular condition which accounts for 1% of primary care visits in the United States.[1] Classification of conjunctivitis is done based on: onset, type of exudate, conjunctival response and aetiology. Infective conjunctivitis based on clinical presentation is divided into two broad classification: a) Acute conjunctivitis (resolving in less than 4 weeks)- which can be further classified based on type of discharge, conjunctival reaction or aetiology and b) Sub acute or chronic conjunctivitis (of more than 4 weeks' duration)- which includes non-specific conjunctivitis, angular conjunctivitis, types of follicular conjunctivitis including trachoma and granulomatous conjunctivitis.[2]Viral conjunctivitis is a common external ocular infection. The most common causative agent is adenovirus. The other organisms causing viral conjunctivitis are : herpes virus, picornavirus, new castle virus etc.[3] Viral conjunctivitis can present as either an acute or chronic inflammation.[4] It may be sporadic or epidemics in environments such as hospitals, schools and swimming pools.Viral shedding occurs for days before clinical features are observed and the transmission is facilitated because they can survive on dry surfaces.[3] It causes a serous or clear watery discharge and is further characterized by the type of conjunctival inflammatory reaction they produce.[2] Viral conjunctivitis due to adenovirus can be of the following types: adenoviral conjunctivitis, follicular conjunctivitis and epidemic keratoconjunctivitis. The incubation period is usually 5–12 days and the clinical illness is present for 5–15 days.[5] The signs of viral conjunctivitis which are usually present are: eyelid oedema, conjunctival hyperaemia, follicles, papillary reaction, petechial haemorrhages, chemosis, membranes, pseudomembranes, subepithelial/anterior stromal infiltrates. Diagnosis is made on the basis of clinical history and examination which is sufficient for viral conjunctivitis. Rarely, Giemsa stain, nucleic acid amplification techniques, isolated virus culture, immunochromatography test are used.[3] Spontaneous resolution of conjunctivitis usually occurs within 2–3 weeks, so specific treatment is typically unnecessary. Meticulous hand hygiene, avoiding eye rubbing and towel sharing reduces the risk of transmission. Proper disinfection of instruments and clinical surfaces after examination should be done followed by a careful rinse. No anti virals are effective. Artificial tears four times daily and cold (or warm) compresses are useful for symptomatic relief. Removal of symptomatic pseudomembranes or membranes. Topical antibiotics are given if secondary bacterial infection is suspected. Povidone-iodine is very effective against adenovirus and has been proposed as a means of decreasing infectivity. [2,3,6]

2. Subjects and Methods

This study is an interventional study where in all participants diagnosed with acute viral conjunctivitis who came to Department of Ophthalmology at Shree Krishna Hospital were included in the study after taking an informed and written consent. Exclusion criteria included participants already on treatment for acute viral conjunctivitis. Basic work up like Visual Acuity, assessment of anterior segment on slit lamp was done. They were further divided by computer based simple randomization into two groups, one group received artificial tears and cold compression while other group received topical antibiotics (ofloxacin), artificial tears and cold compression. Response in both the groups was measured in terms of decrease in amount of conjunctival congestion, symptomatic relief and progression of diseases like corneal involvement (e.g. corneal subepithelial infiltrates) on the day of presentation and thereafter at the end of subsequent weeks, as and when required. These investigations were non-invasive in nature. No additional tests were required pertaining to the study. Baseline assessment was done on 1st day when the patient came to the outpatient department. This study was a qualitative categorical study and hence required Chi Square Test to study the comparison of response between the two groups on the day of presentation and at the end of the subsequent weeks. It was further analysed with independent sample t-test analysis to find if there was a significant difference between the time taken to cure

acute viral conjunctivitis between the two groups. The period of study was supposed to be of maximum 2 years or 150 participants in each group. To achieve mild effect size of 0.30, sample size of 137 participants per group were taken to attain 80% power at 10% type I error. Expected loss to followup was calculated as 20% so sample size was increased.



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3. Results

The study was a randomised interventional study which was done in ophthalmology outpatient department at Shree Krishna Hospital. The study included 300 participants who on the day of the presentation had acute viral conjunctivitis and had not started any kind of treatment and were divided in two groups. GROUP A: No Antibiotic group was given only cold compression and artificial tears; GROUP B: Antibiotic group received antibiotics as well as cold compression and artificial tears. The aim was to study that the role of antibiotics in the management of acute viral conjunctivitis is not very significant and to compare the time taken to heal between the two groups.

The general age distribution of the entire sample (300 participants) was done. The mean age in both the groups: no antibiotic group was 42.64 years and antibiotic group was 45.97 years with p-value of 0.13. In group A, 79(52.7%) participants were males and 71(47.3%) participants were females; while in group B, 76 (50.7%) participants were males and 74(49.3%) participants were females. P-value between both the groups is 0.73, which showed that the gender distribution across both the groups is similar. Acute viral conjunctivitis was prevalent throughout the year, however from March to July which represents the summer season, it was maximum. In the month of May it was observed to be 14.3% which is the highest recorded rate of prevalence of conjunctivitis throughout the year. In group A, 62% (93) participants and in group B 64.7% (97) participants had not spread acute viral conjunctivitis to any other person; On the other hand, in group A, 31.30% (47) participants and 29.30 % (44) participants in group B had spread viral conjunctivitis to a single individual. 6.70% (10) participants in group A and 6 % (9) participants in group B had spread viral conjunctivitis to two or more people. We asked for the history of cold-cough and along with it we examined all the participants for throat congestion to know whether the participants had upper respiratory tract infections. In our study, 50% (75) participants in group A had signs and symptoms of upper respiratory tract infection while 47.30% (71) participants in Group B had signs and symptoms of upper respiratory tract infection. Thus, in both the groups percentage of participants having upper respiratory tract infection were equal with P-VALUE: 0.64. In Group A, out of 50% (75) participants who had upper respiratory tract infection only 12.70% (19) participants had preauricular lymphadenopathy while in Group B out of 47.30% (71) participants who had upper respiratory tract infection, only 12% (18) participants had preauricular lymphadenopathy. The P- value is 0.86 between both the groups.Visual acuity remained the same as observed on the day of presentation in 91.30% (137) participants of Group A and in 94% (141) participants of Group B. While it decreased in 8.70% (13) participants of Group A and 6.0% (9) participants of Group B. Thus, between both the groups the P-VALUE is 0.38. The decrease in visual acuity was related to the development of subepithelial infiltrates. In group A, 74% (111) participants and in group B, 77.3% (116) participants had acute viral conjunctivitis only in one eye while 26% (39) participants in group A and 22.7% (34) participants in group B had acute viral conjunctivitis in both the eyes.

There is no universal system for classification of conjunctival congestion and follicles, so we have examined if the conjunctival congestion was present or absent and the follicles were classified as those present in lower lid, upper lid and present in both the lids. The present study shows that 100% participants had conjunctival congestion on day one in both the groups while at the end of 2nd week, it had disappeared to 46% (69) participants of group A and 48% (72) participants of group B. At the end of 5th week, no participants had conjunctival congestion. Follicles were present in both the groups: In Group A, the follicles in upper lid were 46% (69), 1.3% (2) in the lower lid and 52.7% (79) in both upper and lower lid on day one and in Group B the follicles in upper lid were 20.70% (31) , 27.30% (41) in the lower lid and 52% (79) in both upper and lower lid on day one. The total percentage of people having follicles were similar across both the groups on day one. The follicles disappeared with equal pace in both the groups and by end of 4th week only 10.7% (16) had follicles in group A and in group B none of the participants had follicles. They disappeared completely by end of 5th week. On day one, 54% (81) had petechial haemorrhages in Group A and 52% (78) had petechial haemorrhages in Group B. Petechial haemorrhages disappeared in Group A by end of 5th week where as in Group B they disappeared by end of 4th week. On day one, only 10% (15) participants had subepithelial infiltrates in each group, out of which only 3.3% (5) participants in Group A and 5.3% (8) participants in Group B had residual subepithelial infiltrates at the end of 5th week. The time taken in both the groups to heal acute viral conjunctivitis i.e disappearance of all the signs i.e. conjunctival congestion, follicles and petechial haemorrhages is almost similar with p-value of 0.74. Out of 150 participants in Group A, 8% (12) participants developed mucopurulent discharge and thus required antibiotics because of secondary bacterial infection.

4. Discussion

Viral conjunctivitis is the most common cause of infectious conjunctivitis in all age group and is more prevalent in summer. [7] In our study it was prevalent in all the seasons

with highest prevalence observed in the month of May with highest number of 14.3% (43) participants. The prevalence was more in the following months: March-11% (33) participants, April-13% (39) participants, June-10.7% (32) participants and July-9% (27) participants. Viral conjunctivitis commonly occurs as an epidemic in families, offices, and transmission occurs through contact with infected upper respiratory droplets, fomites, and contaminated swimming pools. Viral conjunctivitis can occur at any age .[8] In our study, the mean age is 44.3 years in both the groups with 8 years being the minimum and 92 years being the maximum. Viral conjunctivitis, secondary to adenoviruses is highly contagious and the risk of transmission has been estimated to be 10% to 50%. [7] In present study, in group A 38% (57) participants and in group B, 35.3% (53) participants had positive history of conjunctivitis in the family members. Incidence of bilateral conjunctivitis was 26% (39) participants in group A and 22.7% (34) participants in group B. In group A, 50% (75) participants had clinical features of upper respiratory tract infection and in group B, 47.30% (71) participants had clinical features of upper respiratory tract infection. In our study, 12.7% (19) participants in group A and 12.0% (18) participants in group B had preauricular lymphadenopathy from those having clinical features of upper respiratory tract infection. Lymphadenopathy was observed in up to 50% of viral conjunctivitis cases in a study done by Amir Azari , and Neal P. Barney.[7]

In present study, participants were examined for conjunctival congestion, follicles, petechial haemmorhages and for any other complications like subepithelial infiltrates and conjunctival membrane in each follow up. Conjunctival congestion was present in 100% in group A and group B on day 1. At the end of 2nd week, no Conjunctival congestion was present in 46% (69) participants in group A and 48% (72) participants in group B. At the end of 4th week, 11.4% (17) participants in group A and 10% (17) participants in group B had minimal conjunctival congestion. By the end of 5th week no conjunctival congestion was seen in any participants of either groups.

Similarly follicles were present in 100 % of the patients: in Group A the follicles in upper lid are 46%(69) participants , in lower lid 1.3% (2) participants and 52.7%(79) participants in both upper and lower lid on day 1 and in Group B the follicles in upper lid are 20.70% (31) participants, in lower lid 27.30%(41) participants and 52%(78) participants in both upper and lower lid on Day 1. The total percentage of people having follicles were equal across both the groups. The follicles disappeared completely by end of 5th week in both the groups. On the first day, 54% (81) participants had petechial haemorrhages in Group A and 52% (78) participants had petechial haemorrhages in Group B. Petechial haemorrhages disappeared in Group A by end of 5th week where as in Group B they disappeared by end of 4th week.On day 1, 10% (15) participants of the participants had subepithelial infiltrates in both the group A and group B. Subepithelial infiltrates remained present in 3.3% (5) participants in Group A and 5.3% (8) participants in Group B by the end of 5th week.In group A only 8% (12) participants were given antibiotic drops because they had developed mucopurulent discharge.

In this study, in group A cold compression and lubricating eyedrops were given while in group B antibiotic eye drops along with cold compress and lubricating eyedrops were given.In our study the mean duration to heal conjunctivitis in group A was 18.7days (+/- 8.75 days) and group B the mean duration was 18.4days (+/- 8.5days) . The duration of conjunctivitis reported in a research article by Roberto was 11.8 (+/-4.9) days in patients with artificial tears groups and 9.4 (+/- 4.6) days in patients from dexamethasone 0.1% / povidone-iodine 0.4% group.[10] In both the group, all signs of viral conjunctivitis disappeared by the end of 5th week with p-value of 0.74. There is no statistical difference to heal conjunctivitis in both the group.

There is no clear consensus for the treatment of acute viral conjunctivitis. Some recent European studies suggest not treating conjunctivitis because the duration of disease is typically only reduced by 1-2 days. In the past, some clinicians have treated adenoviral conjunctivitis with antibiotics because of the potential for a co-infection or superinfection with bacteria.[2,3] Secondary infections are infrequent and bacterial infections typically resolve spontaneously without causing complications outside an immunocomprised host.[11] Today experts believe that no drops or ointments can treat viral conjunctivitis. Antibiotics will not cure a viral infection. Topical antibiotics do not protect against secondary infections, and their indiscriminate use may complicate the clinical presentation by causing allergy and toxicity, leading to delay in diagnosis of other possible ocular diseases. Use of antibiotic eyedrops can increase the risk of spreading the infection to the other eye from contaminated droppers. Increased resistance is also of concern with frequent use of antibiotics. Symptoms can often be relieved with cold compresses and artificial tear solutions. [6,7,9,11]

Limitations included: Single centre study (done at shree krishna hospital), No universal system to check severity of conjunctival congestion, follicles and petechial haemorrhage is present. No other such studies have been done in the past so no data comparison is possible. Thus with limited sample size, this study concludes that artificial tears and cold compression are to be given in patients of acute viral conjunctivitis. Topical antibiotics have no role in the treatment of acute viral conjunctivitis as they do not protect against secondary infections and their indiscriminate use causes allergy, toxicity and delay in diagnosis of other ocular diseases. Thus, judicious use of acute viral conjunctivitis is to be done and should be given only when indicated.

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