**Drug Utilization Pattern for Conjunctivitis in a Tertiary Care Hospital**

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**ABSTRACT:**

**Introduction:** Assessment of drug utilization pattern of conjunctivitis is an important activity that promotes the rationale use of drugs. Thus, the aim of the study is to understand the drug use pattern for conjunctivitis in a tertiary care hospital. **Methods:** A cross-sectional observational study was conducted in the out-patient department of Ophthalmology of Nobel Medical College Teaching Hospital from October 2021 to September 2022. Patients diagnosed with conjunctivitis irrespective of age and gender were included in the study. A structured proforma was designed that contained the demographic profile of participants, types of conjunctivitis and different drugs used in conjunctivitis. Data were expressed in frequency and percentage. **Results:** A total of 385 patients were enrolled in the study. Conjunctivitis was more common in male (55.8%). Viral conjunctivitis was the most common (49.8%). A total of 745 drugs were used. Average number of drugs per prescription was 1.9. The most commonly prescribed drugs were topical antibiotics (40.9%) followed by tear drops (27.5%). Ciprofloxacin (36.1%) was the most commonly prescribed topical antibiotic. **Conclusions:** Topical antibiotics were commonly used in most cases of conjunctivitis. Among topical antibiotics, ciprofloxacin was commonly prescribed.

**Keywords:** Conjunctivitis; Drug utilization; Ophthalmology; Out-patient

Submitted: 1 September, 2023.

Accepted: 21 April, 2024.

Published: 21 April, 2024.

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**INTRODUCTION:**

Conjunctivitis is an inflammation of the conjunctiva, which is characterized by hyperemia and swelling of the conjunctiva, generally associated with an outflow of tears.[1,2] It is a common problem worldwide. Annually estimated six million new cases of viral conjunctivitis occur in the United States.[3,4] The prevalence of conjunctivitis varies according to the underlying causes as well as seasons of the year.[5]

**How to cite this article:**

Yadav NK, Ghimire R, Panjiyar P. Drug Utilization Pattern for Conjunctivitis in a Tertiary Care Hospitals. J Lumbini Med Coll. 2024;11(1):9 pages.

DOI: https://doi.org/10.22502/jlmc.v11i1.504

Epub: 17 March, 2024.

Viral conjunctivitis is the most common cause of infectious conjunctivitis and is more prevalent in summer season.[5,6] Bacterial conjunctivitis is the second most common type and is responsible for majority of cases in children; it is observed more frequently from December to April. Allergic conjunctivitis is observed more frequently in spring and summer.[6]

Artificial tears (tear drops), topical antihistamines may be useful in viral conjunctivitis.[7] Antibiotic eye drop is effective in the treatment of bacterial conjunctivitis. Likewise, topical decongestants, antihistamines, mast cell stabilizers, non-steroidal anti-inflammatory agents and corticosteroids are indicated in cases of allergic conjunctivitis.[2,8] Assessment of drug utilization pattern of conjunctivitis is an important activity that promotes the rationale use of drugs. Some studies have been conducted worldwide in the past to assess drug use pattern of conjunctivitis.[9,10,11] Thus, the study was attempted to generate baseline evidence regarding drug utilization pattern in conjunctivitis which will be supportive to further studies in future.

**METHODS:**

A hospital based observational cross-sectional study was carried out in the ophthalmology out-patient department (OPD) of Nobel Medical College and Teaching Hospital (NMCTH) for the duration of 12 months from October 2021 to September 2022. Data were collected only after taking the ethical approval from the Institutional Review Committee of Nobel Medical College and Teaching Hospital (Ref No.: IRC-NMCTH 511/2021). An informed consent from each patient was also taken. For participants under 18 years of age, consents were given by their parents or guardians. Patients were well informed regarding the research prior to taking the consent. Patients with the diagnosis of conjunctivitis irrespective of age and gender were included in the study. The diagnosis of the patient was taken into consideration after reviewing the prescription forms filled by the doctors. Conjunctivitis patients who were not prescribed any drugs in prescription forms and did not provide the consents were excluded from the study. The sample size was calculated by using the following statistical formula:

n = Z2× p × q/d2

= (1.96)2 × 0.5× 0.5/ 0.052

= 384

Where,

n= minimum required sample size

Z= 95% confidence interval (1.96)

p = prevalence of use of drugs, 50% [12]

q = 1-p

d= 5 % error margin

A convenience sampling technique was used for data collection. The primary data were collected from ophthalmology OPD of NMCTH and entered into a well-structured proforma. This proforma consisted of information related to demographic profile of the patients, types of conjunctivitis and drug used pattern for the management of conjunctivitis. The confidentiality of the patient was ensured by keeping code numbers in place of name and address of patients. The data were also secured by password protected software.

The collected data were entered into MS-Excel and analyzed using Statistical Package for the Social Sciences (SPSS) version 18. Data were expressed in frequency and percentage.

**RESULTS:**

A total of 385 patients were enrolled in the study. Of the total patients, 23.4% were in between the age of 41-50 years and 55.8%

were male. The mean age in years was 33.2±13.5 (Table 1). The most common type of conjunctivitis was viral conjunctivitis (49.8%) followed by allergic conjunctivitis (28.5%) as demonstrated in Table 2. Among the clinical features of conjunctivitis, redness of eye was the most common (22.0%).

Table 1. Demographic profile of the Conjunctivitis patients (*N = 385)*

|  |  |
| --- | --- |
| Age (Years) | Numbers (%) |
| 0-10 | 10 (2.5) |
| 11-20 | 75 (19.4) |
| 21-30 | 85 (22.0) |
| 31-40 | 80 (20.7) |
| 41-50 | 90 (23.4) |
| 51-60 | 45 (12.0) |
| Gender |  |
| Male | 215 (55.8) |
| Female | 170 (44.2) |
| Mean age (in years) | 33.2 ± 13.5 |

Of the total patients, (49.8%) suffered from viral conjunctivitis followed by allergic conjunctivitis (28.6%) as shown in Table 2.

*Table 2: Types of Conjunctivitis (N = 385)*

|  |  |
| --- | --- |
| Types | Numbers (%) |
| Viral conjunctivitis | 192 (49.8) |
| Allergic conjunctivitis | 110 (28.6) |
| Bacterial conjunctivitis | 83 (21.6) |

A total of 745 medicines were prescribed in this study. The average number of drugs per prescription was 1.9. Topical antibiotics were commonly used (40.9%). Details on drugs used in conjunctivitis are shown in Table 3.

Of total topical antibiotics prescribed (N=305), Ciprofloxacin (36.1%) was the most commonly used followed by ofloxacin (24.6%) as showed in Table 4.

*Table 3: Drugs used in conjunctivitis (N = 745)*

|  |  |
| --- | --- |
| Drugs | Numbers (%) |
| Lubricating agents (Artificial tear drops) | 205 (27.5) |
| Topical antibiotics | 305 (40.9) |
| Steroid (Fluromethalone eye drop) | 70 (9.4) |
| Anti-histamines (Olopatadine eye drop) | 85 (11.4) |
| NSAIDs | 80 (10.8) |

\*NSAIDs: Non-steroidal Anti-inflammatory Drugs

*Table 4: Topical Antibiotic used in conjunctivitis (N = 305)*

|  |  |
| --- | --- |
| Antibiotics | Numbers (%) |
| Ciprofloxacin | 110 (36.1) |
| Chloramphenicol | 70 (22.9) |
| Ofloxacin | 75 (24.6) |
| Tobramycin | 50 (16.4) |

**DISCUSSION:**

To obtain information about patterns, quality and outcomes of drug use, it is important to study drug utilization patterns for conjunctivitis. Regardless of the type of conjunctivitis, topical antibiotics were used in majority cases of conjunctivitis in this study. Topical antibiotics help to reduce the duration of infection, complication and spread of infection to others. The choice of topical antibiotics and their prescription may vary depending upon the indication of patient.[13] Therefore, it is important to evaluate the utilization pattern of different topical antibiotics in Ophthalmology OPD setting to look for their rational use. This study was conducted to evaluate the drug utilization pattern among conjunctivitis patients in Ophthalmology OPD of a tertiary care hospital.

The present study concluded that conjunctivitis was more common among patients between the ages of 41-50 years. Viral conjunctivitis was more common in this age group and Adenovirus was responsible for almost 90% cases of viral conjunctivitis.[5] The previous study done by Sthapit PR et al. showed that conjunctivitis was more common in the children age group of one month to 10 years old due to frequent contact with infective organism.[14] The number of male patients (55.8%) was higher than that of females (44.2%) in the present study. Researchers like Dutta SB et al. and Banerjee I et al. reported that conjunctivitis was more common among males than females.[11,15]

The present result showed that viral conjunctivitis was the commonest type. It was supported by Azari AA et al.[2] whereas another study done by Suman RK et al. demonstrated that allergic conjunctivitis was more common.[10] The study done by Keen M et al. showed that 75% cases were viral conjunctivitis among conjunctivitis.[16] Redness of eye was common symptom in the present study. The previous studies showed that redness of eye was common in Bhat N et al.[17] but study done by Everitt H et al.[18] showed eye discharge was common. Redness of eye occurred due to swelling and irritation of small blood vessels in conjunctiva.

The number of drugs prescribed per patient was 1.93 in the present study. This finding was similar to the study conducted by Dutta SB et al.[11] The present study showed that topical antibiotics (40.9%), tear drops (27.5%), antihistamines (11.4%), NSAIDs (10.8%) and steroids (9.4%) were used for the treatment of conjunctivitis. Previous study done by Suman RK et al. also showed that antihistamine (34%), artificial tears (22%), antibiotics (14%), steroids (11%) and NSAIDs (6%) were used in conjunctivitis.[9] Topical antibiotic was used as prophylaxis to prevent from keratitis. Ciprofloxacin was commonly prescribed as topical antibiotic where as in previous studies done by Hope PKF et al. gentamycin was prescribed[19] but Hutnik C et al. suggested topical antibiotics help to accelerate the recovery from bacterial conjunctivitis.[20] Ciprofloxacin eye drop was used in treatment for bacterial keratitis.

The present study has some limitations. A limited number of patients presenting with conjunctivitis were enrolled. It was not differentiated among the type of micro-organisms which caused conjunctivitis. Proper guidelines on the rational use of drugs in the treatment of conjunctivitis were not available.

**CONCLUSIONS:**

The prevalence of drug use in conjunctivitis in our study was similar to the findings of other literature conducted in similar standard settings. The study also showed an outline of drug use in the treatment of conjunctivitis. Viral conjunctivitis was more common than other types of conjunctivitis. Redness of the eye was a common symptom of conjunctivitis. Topical antibiotics and artificial tear drops were commonly prescribed drugs in viral conjunctivitis. Ciprofloxacin eye drop was the drug prescribed among topical antibiotics in our study.

**ACKNOWLEDGDEMENT:**

Dr. Amar Kumar Yadav, Department of Community Medicine

**CONFLICT OF INTEREST:** None.

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