

Original Research Article

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Bacteriological Profile of Conjunctivitis in Patients Attending a Tertiary Care Rural Hospital in Hyderabad

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ABSTRACT

Inflammation or infection of the conjunctiva is known as conjunctivitis. Bacterial infections account for up to 50-70% of all conjunctivitis cases. Bacterial conjunctivitis is common and affects all age groups. Clinical evaluation and microbiological analysis is valuable for specific treatment. This study was undertaken to elicit bacterial profile and their antibiotic susceptibility of conjunctivitis. This study was carried out in the departments of Ophthalmology and Microbiology of MediCiti Institute of Medical Sciences, Ghanpur, Hyderabad for period of 3 months. Clinical data and Conjunctival swabs collected from patients with clinically diagnosed as acute conjunctivitis were processed by Gram's stain, culture and antimicrobial susceptibility testing by standard methods and as Chronic conjunctivitis were processed by Geimsa stain. The data was presented as percentages and proportions. 95% confidence intervals were calculated wherever applicable. All calculations were done using SPSS version 16. Of the total 60 samples processed 15(25%) were sterile. Acute conjunctivitis was seen in 80% while chronic conjunctivitis in 20%. In our study both eyes were affected in 84%. 11 swabs showed more than one isolate. Of the total organisms (56) isolated, majorly were Coagulase negative *Staphylococcus* (76%) among Gram positive bacteria (88.8%) and majorly *Klebsiella* species (9%) among Gram negative bacteria (11.1%). The maximum antibiotic sensitivity of the isolates was against ceftazidime (94.20%) followed by Gentamicin (78.8%) while the maximum resistance was against Ampicillin (94.2%) followed by Ciprofloxacin (73.1%). Most bacteria were susceptible to wide range of antibiotics. So, starting the treatment with higher antibiotics should be minimized. However, the choice of antibiotics should be made on the basis of microbiological report.

Keywords

Conjunctivitis,
Klebsiella,
Staphylococcus,
Antibiotics

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Introduction

Inflammation or infection of the conjunctiva is known as conjunctivitis. Bacterial infections account for up to 50-70% of all conjunctivitis cases. Bacterial conjunctivitis is

common and affects all age groups. These include both Gram positive organisms as well as Gram negative bacteria.

Conjunctivitis is a common non-traumatic disease of the eye characterized by pain,

conjunctival congestion and discharge; common etiological agents being viruses, bacteria, allergens or chemical irritants.

In India, the exact prevalence and incidence of bacterial conjunctivitis is not clearly known; however, international data estimates the prevalence of conjunctivitis in the United States as 1.35% per year.

While bacterial conjunctivitis is generally self-limiting, treatment with topical antibiotics is associated with earlier clinical and microbiological remission, as well as decreased discomfort and morbidity. Antibiotic therapy is typically initiated empirically, with guidelines recommending cultures only in severe, chronic, recurrent, or treatment-unresponsive cases.

Since the introduction of antibiotics, bacterial resistance has continued to pose an ongoing problem across infectious diseases, and ocular infection pathogens are no exception. The presence of antibiotic resistance among ocular pathogens is of concern, as it complicates the choice of antibiotic and may lead to treatment failure. However, few surveillance studies have specifically focused on susceptibility patterns among ocular pathogens.

The present study was designed to attempt to identify the etiological agents of bacterial conjunctivitis and their antimicrobial resistance patterns especially against newer generation Fluoroquinolones and to make recommendations that may assist clinicians in choosing appropriate empiric therapy.

To elicit bacterial profile and their antibiotic susceptibility of conjunctivitis

Materials and Methods

This was a cross sectional study carried out in the departments of Ophthalmology and

Microbiology of Medici Institute of Medical Sciences, Ghanpur, Hyderabad.

Study Period: June 2018 to August 2018,
Sample size: 60

During this period, patients presenting to the out-patient department (OPD) at the Department of Ophthalmology, with signs and symptoms of conjunctivitis were included in the study. Patients who had already received antimicrobial treatment were excluded. Written informed consent was taken from the patients/ guardians prior to inclusion in the study.

Ethical clearance was taken from institutional ethical committee. Clinical data and Conjunctival swabs were collected from patients with clinically diagnosed as acute conjunctivitis were processed by Gram's stain, culture and antimicrobial susceptibility testing by standard methods and as Chronic conjunctivitis were processed even by Giemsa stain.

For each patient, two sterile cotton swabs moistened with sterile physiological saline were swept along the inferior palpebral conjunctiva, avoiding contamination from the skin of the eyelid and the mucopurulent material accumulated at the inner canthus.

One swab was used to prepare smear on a clean glass slide, which was stained by Gram's staining +/- Giemsa stain (in chronic) and scanned under oil immersion lens. Second swab was inoculated on to nutrient agar, MacConkey's agar, blood agar and chocolate agar. All the culture plates were incubated at 37°C and observed after 24 hours and 48 hrs of incubation. Identification of bacterial pathogens was based on colony morphology, staining characteristics and biochemical properties following standard laboratory protocol.

Results and Discussion

According to symptoms, signs and duration they were categorized as Acute conjunctivitis in 80% while chronic conjunctivitis in 20%. Both eyes were affected in 84% cases. Patients of all age groups were affected, among which common is children 1-10yrs of age (33%) and middle age group that is 21-30yrs among adults (28%) (Graph-1: Age wise distribution). Males (66%) were higher in the study in comparison to females.

Of the total 60 samples processed 15(25%) were sterile. Out of the 45 positive samples, 11 samples showed more than one isolate. So, the total organisms isolated were 56 (Table 1: Bacterial pathogens isolated in conjunctivitis) All isolated organisms were bacterial strains.

No specific findings were noted in the Geimsa satin.

A total of 48 isolates were gram positive and 8 isolates were Gram negative. Among the total organisms isolated majority were Coagulase negative *Staphylococcus* (76%) among Gram positive bacteria (88.8%) and majorly *Klebsiella* species (9%) among Gram negative bacteria (11.1%) (Graph 2).

The maximum antibiotic sensitivity of the isolates was against ceftazidime (94.20%) followed by Gentamicin (78.8%) while the maximum resistance was against Ampicillin (94.2%) followed by Ciprofloxacin (73.1%). (Table 2: Percentage of Strains susceptible to the Antimicrobial Agents tested).

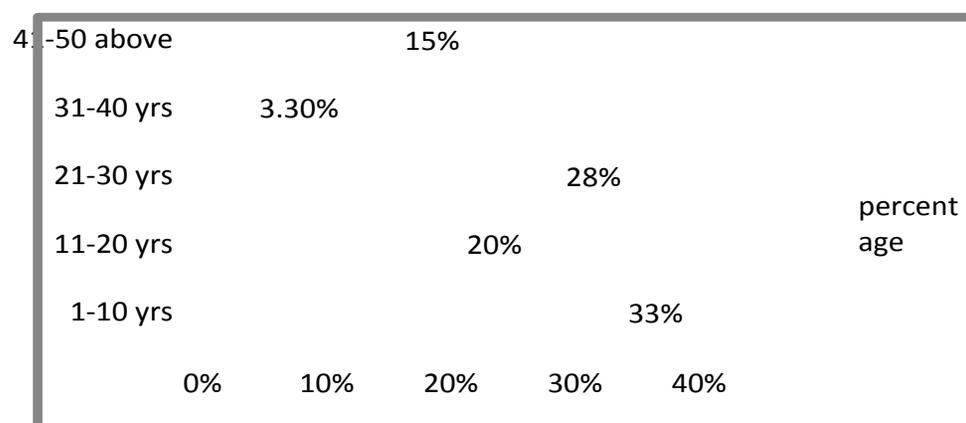
Table.1 Bacterial Pathogens isolated from conjunctivitis cases

Microorganisms	No of pure isolates	No of isolates mixed with others	Total Isolates (%)
<i>Staphylococcus aureus</i>	3	1	4(7%)
<i>Streptococcus pneumoniae</i>	1	-	1(2%)
CONS	34	9	43(76%)
<i>Klebsiella spp.</i>	5	-	5(9%)
<i>Citrobacter</i>	1	1	2(4%)
<i>E. coli</i>	1	-	1(2%)
Total no of isolates	45	11	56(100%)

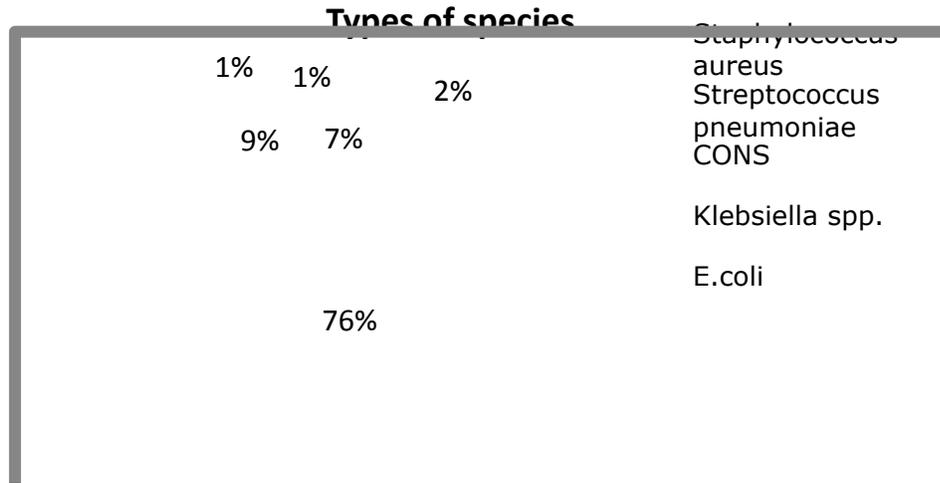
Table.2 Percentage of strains susceptible to the antimicrobial agents tested

Types of isolates	Chloramphenicol	Amikacin	Gentamicin	Ciprofloxacin	Ofloxacin	Gatifloxacin	ceftazidime	Ampicillin	Tetracycline
<i>Staphylococcus aureus</i> (n=4)	69%	69%	78.80%	52%	61%	96%	94.20%	6%	100%
<i>Streptococcus pneumoniae</i> (n=1)	100%	65%	72.40%	58%	76%	92%	96%	6%	100%
CONS(n=43)	72%	79%	80%	45%	77%	96%	96%	4%	100%
<i>Klebsiella spp</i> (n=5)	58%	88%	96%	0%	100%	100%	95%	0%	96%
<i>Citrobacter sps</i> (n=2)	56%	96%	94%	56%	100%	100%	96%	0%	96%
<i>E. coli</i> (n=1)	0%	100%	100%	0%	100%	100%	96%	0%	96%

Graph.1 Age wise distribution



Graph.2



Bacteriological investigations done for a 60 clinically diagnosed cases of conjunctivitis gave the following conclusions- Bacterial conjunctivitis accounts to 75%. Infections are usually seen with bilateral involvement with greater incidence among children and males.

Gram positive organisms were 88.8% and Gram negative organisms were 11.1% in the present study. Various studies have shown similar data like Naz Parween *et al.*, (2016) (77.5% and 22.4%), Okesula *et al.*, (2010) (94.5% and 5.4%) and Veena *et al.*, (2016) (88.75% and 21.25%).

The fact that 33% of patients reported within 2 days of onset, establishes the fact that conjunctivitis hinders daily activities.

Gram stain examination yielded 25% results suggestive of bacterial infection whereas on culture 75% positive, indicates the need for culture and sensitivity.

Significant resistance of Gram-positive cocci to aminoglycosides (20% to 28%) was observed. Emerging resistance to fluoroquinolones, especially of gram positive organisms (in 40-48%), was also observed.

Which are the routinely used empirical antibiotics for conjunctivitis.

In the present study, Ciprofloxacin sensitivity ranges from 0-58% as in other studies like Naz Parween *et al.*, 2016 (0-88%), Veena C N *et al.*, 2016 (0-69.2%) and Okesula *et al.*, 2010 (0-85.7%).

To conclude, bacteriological evaluation of conjunctivitis provides a working knowledge of the causal microbes, their common presentations, clinical course and antibiotic sensitivity patterns along with confirming the clinical diagnosis. It also helps to avert the use of inappropriate medications and reduce the risk of drug resistant strains.

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