

SENSITIVITY PATTERN OF BACTERIAL ISOLATES FROM PURULENT CONJUNCTIVITIS IN NGURU, NORTHEAST, NIGERIA.

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INTRODUCTION

Bacteria are the most common micro-organisms that cause conjunctivitis. This is so because the bacterial pathogens inhabit the ocular surface though the lysozyme and antibodies in tears along with the blinking mechanism keep their population in check.¹ The most common micro-organisms implicated in bacterial conjunctivitis include, *Staphylococcus aureus*, *Neisseria gonorrhoeae*, *Streptococcus pneumoniae* and *Haemophilus influenzae*. Other organisms are *Moroxella lacunata*, *Chlamydia trachomatis* and *Corynebacterium diphtheriae*^{2,3}. Although majority of bacterial conjunctivitis are self limiting, without need for medical intervention, studies have demonstrated that antibiotic therapy hastens the eradication of bacteria, prevents the dissemination of the infection to other structures, decreases the risk of systemic diseases, reduces person to person spread and shortens the symptomatic period allowing the patient to return more quickly to his or her normal activities^{4,5}.

In our own environment, most times eye care providers start the treatment of external ocular infection before the causative micro-organism is identified and consequently, broad spectrum antibiotics are routinely used in the treatment of bacterial conjunctivitis. A prior knowledge of bacterial sensitivity pattern is essential in the management of bacterial conjunctivitis. It is in light of this that we present the sensitivity pattern of bacterial conjunctivitis among patients presenting with conjunctivitis at Federal Medical Centre Nguru, Northeast Nigeria.

METHOD

This was a cross sectional study carried out from January to December 2006 on all patients that attended ophthalmology clinic of Federal Medical centre Nguru with complaints of eye discharge. All samples were collected by swabbing the lower conjunctival surface using sterile swab after obtaining verbal consent from the patients. All the swabs were labelled according to patients' age and sex and were sent to the laboratory immediately. On arrival to the laboratory all samples were registered and smeared onto sterile oven dried agar plate (chocolate, MacConkey and blood agar) and

ABSTRACT

Background: Bacterial conjunctivitis is a common condition encountered in practice

Objective: To ascertain the commonest cause of Bacterial conjunctivitis in this environment and its sensitivity pattern.

Design: This was cross sectional hospital- based study, carried out from January to December 2006 on all patients that attended the ophthalmology clinic with purulent conjunctivitis. The affected eyes were swabbed for the microscopy culture and sensitivity after obtaining their consent.

Results: There were 129 specimens sent for microscopy, culture and sensitivity. , 82(63.6%) yielded no bacterial growth while 47(36.4%) yielded significant growth. The most frequent Bacteria isolated were *Staphylococcus aureus* (46.9%) and *Klebsiella spp* (17.0%). Other bacteria seen include *E coli* (6.4%), *Haemophilus influenzae* (8.5%), *Neisseria gonorrhoeae* (10.6%) and *Proteus spp* (10.6%). The antimicrobial agent that showed the highest sensitivity among all the isolates was ciprofloxacin while chloramphenicol showed the least sensitivity.

Conclusion: *Staphylococcus aureus* was found to be the commonest cause of bacterial conjunctivitis and ciprofloxacin the most sensitive antimicrobial agent to all bacterial isolates.

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Keywords:

Conjunctivitis, Bacterial isolates,
Antimicrobial sensitivity

incubated at 37° c for 24-72 hours. The chocolate agars were incubated under microaerophilic condition using candle jar for carbon dioxide environment. After overnight incubation, the culture plates with growth of pure colonies were subjected to gram staining and biochemical reaction for identification according to standard technique⁶. The identified isolates obtained were subjected to antibiotic susceptibility by using Disk-diffusion method.

RESULT

There were 129 patients with purulent conjunctivitis whose eye swabs were sent for microscopy, culture and sensitivity. This comprised 88(68.2%) males and 41(31.8%) females giving a male: female ratio of 2.1:1. Table 1 shows the age distribution of

TABLE 1 Age distribution of 129 patients with purulent conjunctivitis

Age (years)	Frequency (no)	Percentage (%)
0-10	45	34.9
11-20	21	16.3
21-30	19	14.7
31-40	9	7.0
41-50	20	15.5
51-60	7	5.4
61-70	5	3.9
>70	3	2.3
Total	129	100

Table 2 Distribution of Bacterial isolate in 47 culture positive samples

Bacteria	Frequency (no)	Percentage (%)
Staphylococcus aureus	22	46.9
Klebsiella spp	8	17.0
Escherichia coli	3	6.4
Haemophilus influenzae	4	8.5
Neisseria gonorrhoeae	5	10.6
Proteus spp	5	10.6
Total	47	100

Table 3. Sensitivity pattern of the antimicrobials

Antimicrobial agent	Neisseria gonorrhoeae (%)	Haemophilus influenzae (%)	Staph aureus (%)	Proteus spp (%)	E coli (%)	Kleb spp (%)
Ciprofloxacin	97.6	98.3	88.4	93.6	91.7	92.8
Augumentin	88.7	90.1	63.1	78.4	84.7	64.7
Gentamycin	93.7	64.9	85.4	90.1	86.2	81.7
Ampiclox	54.6	78.2	42.8	90.2	88.1	73.4
Erythromycin	76.1	64.1	41.7	73.8	55.4	44.2
Chloramphenicol	64.0	92.3	23.7	77.8	62.8	43.7

the patients that came with conjunctivitis. The most frequent age group was in the first decade of life which constituted 34.9% of all cases. The frequencies of presentation of conjunctivitis cut across all age groups but were more frequent in the first decade of life and rare above the age of 70 years.

Of the 129 samples, 82(63.6%) yielded no growth while 47(36.4%) yielded significant growth. The most frequent bacteria isolated was *Staphylococcus aureus*. It accounted for 46.9% of all the isolates, while *Klebsiella* spp and *Escherichia coli* were seen in 17% and 6.4%, respectively. The distribution of the bacterial isolates is shown in table 2.

Over 90% of bacterial isolates are sensitive to ciprofloxacin. The

sensitivity patterns to antimicrobial agents are shown in table 3.

DISCUSSION

Conjunctivitis is a very common clinical condition and constitutes a large proportion of work load in any ophthalmic setting. Although majority of bacterial conjunctivitis are self limiting, without need for medical intervention, studies have demonstrated that antibiotic therapy hastens the eradication of bacteria, prevents the dissemination of the infection to other structures, decreases the risk of systemic diseases, reduces person to person spread and shortens the symptomatic period allowing the patient to return more quickly to his or her normal activities^{4,5}. Bacterial conjunctivitis, its frequency, cause, distribution, and course are influenced by age, climate, social and hygienic

conditions, and coexisting epidemic disease⁷. In this study 34.9% of the patients were in the age group of 0-10 years most of whom were below 5 years of age. This may be related to the fact that neonates and infants are prone to infection because they have low levels of antibacterial agents and proteins like lysozyme and immunoglobulin A and G consequent upon the fact that tear film is just beginning to develop⁸. Eighty two (63.7%) of the specimens yielded no bacterial growth. This high percentage of negative bacterial growth may be due to the fact that most patients would have used antimicrobial agents before presenting to the clinic which could have contributed to high negative growth and may also contribute greatly to development of bacterial resistance to antimicrobial agents.

The most common cause of bacterial conjunctivitis are *Staphylococcus aureus* and *Staphylococcus epidermidis* but other Gram positive cocci including *Streptococcus pneumoniae* are also frequent pathogens as are the Gram-negative like *Haemophilus influenzae* and *Moraxella lacunata*^{1,9}. In this study, 46.9% of the bacterial isolates were *Staphylococcus aureus*, which corresponds well with that of Nwakwo,s¹⁰ (47.4%) findings in a study of bacterial aetiological agents and antibiotic sensitivity pattern in Kano. Asonye and Ezelun¹¹ reported 40% in their series. Iyanu and Nabulele et-al in Benin City in a survey on ophthalmia neonatorum reported that, *Staphylococcus aureus* was seen in 63% of neonates which is higher than the one in this study⁵. *Neisseria gonorrhoeae* is seen in up to 10.6% of the culture positive cases in this study. The reason for the relatively high presentation could not be explained. Gonococcal infection is a rare cause of ophthalmia neonatorum which is transmitted from mother to child during delivery¹². Over 90% of the bacterial isolates in this study were sensitive to ciprofloxacin. This high sensitivity to quinolone was also reported in other similar studies^{13, 14}. The antimicrobial agent with the least efficacy in this study is chloramphenicol; its wide use in self medication locally may have contributed to this high level of

resistance.

In conclusion the main bacterial agent isolated in this study was

Staphylococcus aureus and ciprofloxacin was found to be the most effective antimicrobial agent to all bacteria isolated in this study. The

knowledge of this antibiogram will be of local clinical relevance in choosing antimicrobial agent in situations where empirical therapy is necessary.

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