Bacterial Conjunctivitis and Use of Antibiotics in Dhulikhel Hospital - Kathmandu University Hospital

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ABSTRACT

Background
Acute Infective Conjunctivitis may be due to viral or bacterial infection; though it is usually self limiting, topical antibiotics are often prescribed for rapid recovery.

Objectives
This study aims to find out prevalence of bacterial infection among cases of acute infective conjunctivitis and to determine their in-vitro antibacterial susceptibilities to commonly used antibacterial agents and to find out whether the rampant use of topical antibiotics are at all necessary or justified.

Methods
A prospective analytical study conducted over a period of two years on clinically diagnosed cases of Acute Infective Conjunctivitis. Isolation and identification of microorganisms by culture and antimicrobial susceptibility test were done on conjunctival swabs from 65 patients.

Results
A total of 65 patients were included where children (one month to 10 years old) accounted for the commonest age group (35.4%). On Gram’s Stain, 90.8% were negative for pus cells or microorganisms. Gram positive cocci were found in 6.2% of cases. On culture, bacterial growth was seen in 11 cases (18.9%) among which Streptococcus pneumonia was seen in seven cases (10.8%). The analysis on in-vitro susceptibility testing showed that Chloramphenicol and Gentamicin were the most sensitive (78.6% of samples) drugs for conjunctivitis.

Conclusion
Ophthalmic antibiotics should be prescribed judiciously in acute infective conjunctivitis even for suspected bacterial cases; since it is found to resolve spontaneously without any serious complications. Chloramphenicol and Gentamicin are drugs of choice if at all required.

Key Words
acute infective conjunctivitis, bacterial conjunctivitis, chloramphenicol, gentamicin

INTRODUCTION
Conjunctivitis is the inflammation of the conjunctiva and it is the most frequent cause of red eye. The conjunctivitis may be caused by bacteria, viruses, allergens or irritants. Of these, the acute infective conjunctivitis (AIC) is either the viruses or bacteria.

Bacterial conjunctivitis is relatively less common than viral conjunctivitis. Microbial conjunctivitis is not normally serious and usually moves away spontaneously within a week. However the patients with AIC are often prescribed topical antibiotics as eye drops or ointment for rapid recovery. Prescribing antibiotics for minor self limiting conjunctivitis should be discouraged because of development of antibiotic resistance strain.1

The aim of this study is to find out the prevalence of bacterial infection among cases of acute infective conjunctivitis and to determine their in-vitro antibacterial susceptibilities to commonly used antibacterial agents and to find out whether antibiotics therapy is really required or not in all the cases of acute infective conjunctivitis

METHODS
This is a prospective analytical study carried out at Ophthalmology Department Out Patient Services of Dhulikhel Hospital with 65 patients, of age more than one month old, who presented with a red eye and discharge or “glued eyelids” from Jan 2009 to Dec 2010. History of redness, foreign body sensation, itching and type of discharge were recorded. All the patients were examined
in slit lamp bio microscope (Topcon) and the presence of congestion, type of discharge, lid edema and corneal superficial punctuate keratitis were noted.

Two sterile broth-moistened cotton swabs were used to collect materials. The swabs were rubbed over the lower fornix of each eye separately, from lateral to the medial side, kept back in sterile test tubes and sent to the laboratory soon after collection.

In the laboratory, on receipt of the swabs, they were seeded on Blood agar and then a smear was made. The smeared slide was stained by Gram stain and Giemsa stain for any evidence of bacteria and the types of inflammatory cells present. The inoculated Blood agar was processed for isolation and identification by standard lab procedure. Antimicrobial susceptibility test of bacterial isolates were done by Kirby Bauer disc diffusion method and interpretation done using National Committee for Clinical Laboratory Standards (NCCLS) serum standards. Results were tabulated and statistical analysis was performed with Statistical Package for Social Sciences version 11.3 (SPSS) program.

RESULTS

Among 65 patients with red eye and discharge, 60% of patients were female. Children (one month to 10 years old) (35.4%) had the highest frequency; followed by 11-20 years old (24.6%), 21-30 years old (20%), 31-40 years old (9.2%) and 41-50 years old (10.2%).

The symptoms in descending orders were redness of eyes (89.2%), swelling of eyes (69.2%), watery discharge (52.3%), discomfort and foreign body sensation (50.8%), pain (33.8%), mucoid (29.2%), mucopurulent (12.3%) and purulent discharge (1.6%).

On examination of eyes, 96.8% had diffuse superficial congestion of conjunctiva, 48.4% had follicles in lower fornix conjunctiva. Lid edema, matting of lashes and scales were present in 24.2% of cases. Pseudomembrane was present in 9.7% of cases and sub conjunctival hemorrhage in 3.2% of cases. Only one patient had corneal involvement with superficial punctuate keratitis.

On gram staining of the swabs, 90.8% of samples did not show any pus cells or micro organisms. Gram positive cocci were seen in 6.2% of samples and rest of the results are tabulated in table 1.

One way Analysis of Variance (ANOVA) test with Staphylococcus aureus and Streptococcus pneumoniae as independent variables and Chloramphenicol, gentamicin and Ciprofloxacin as dependent variable (table 4) revealed significant correlations.

DISCUSSION

In this two years prospective study in the patients attending the Eye Out Patients services, most of them were children (35.4%) followed by young adults (24.6%) presenting with acute infective conjunctivitis. The principal presenting clinical features were red eyes (89.2%) and swelling of lids (69.2%). The age group of patients mostly affected were students indicating that conjunctivitis like all other communicable diseases are due to frequent contact
with infective organisms either at school or college. One in
eight schoolchildren has an episode of acute infective
conjunctivitis every year in Canada.2

A mucopurulent or purulent discharge is said to be most
commonly seen in bacterial or chlamydial conjunctivitis,
whereas watery discharge is supposed to be more typical
of a viral conjunctivitis. In this study, the findings of
pseudomembrane (9.7%), mucopurulent (12.3%) and
purulent discharge (1.6%) proved to be of bacterial in
origin only in one tenth of the cases. Presence of follicles in
48.8% suggests that at least half of the conjunctivitis is of
viral in origin. Only one patient had superficial punctuate
keratitis and rest of them healed without any complications
in our follow up studies indicating that AIC is an innocuous
condition. 90.8% of samples did not show any pus cells or
micro organisms in direct Gram stain and Giemsa stain
which statistically indicates that most cases of AIC are not
bacterial in origin. Among positive results, 7.7% of samples
showed pus cells only. Gram positive cocci were seen in
6.2% of samples whereas gram positive bacilli and gram
negative cocci was seen in 1.5% of samples. Similar results
were reported in a study done in South India where the
most frequently isolated bacterial isolates were gram-
positive cocci (70%) followed by gram-negative bacilli
(15.85%) and gram-positive bacilli (10%).3

On Blood agar culture, growth was seen in 11 cases
only (18.9%). No growth was seen in 54 samples
(83.1%) suggesting again that most of the cases are viral
conjunctivitis which does not need antibiotics at all. The
commonest organism grown was S. pneumoniae (10.8% of
cases). Everitt HA detected bacterial growth in 50% of swabs
in patients with conjunctivitis, among which organisms
were H. influenzae (26 swabs, 38%), S. pneumoniae (16
swabs, 23%), and S. aureus (11, 16%).4 Other studies
done by Steven J. Lichtenstein et al and Greenberg D et al
reported similar bacterial isolates.5 6

The more culture positives in the above studies most
probably are due to sample selection where the patients
were children and young adults in whom bacterial infection
is more common. In our study also, among 17 culture
positives, 10 samples were from patients <20 years old.
Only seven culture positives were from age group 20-50
years old which suggests that bacterial conjunctivitis is
common in younger age group while viral is more common
in older age group. Similar results were seen in one study
done in adults where bacterial pathogens were present in
only 32% of cases. Further more, bacteria that reside among
the normal ocular flora can result in “false positives” when
microbiologic tests are performed.2

Vichyanond P. et al reported excellent sensitivity with
Chloramphenicol and Tetracycline against Gram negative
and positive bacteria of all age groups.7 Another study
reported that most of the bacterial isolates were susceptible
to Gatifloxacin (650 of 776; 83.76%) and Olofoxacin (626 of
776; 80.67%).8 In our study Chloramphenicol, Ciprofloxacin
and Gentamicin responded to all the bacterial conjunctivitis
cases. The two samples had MRSA strain positive which
was found during outbreak of MRSA in five wards of our
hospital. MRSA are known for their resistance to many
systemic antibiotics but in our case they were sensitive to
Gentamicin, Chloramphenicol and Ciprofloxacin and
were treated quite easily. Resistance develops rapidly
and easily amongst Pseudomonas aeruginosa and other
gram-negative rods to Fluoroquinolones, (Ciprofloxacin,
Olofoxacin) so these should not be used except in exceptional
circumstances when they are indicated. Chloramphenicol is
the treatment of choice in New Zealand, Australia and the
United Kingdom for uncomplicated conjunctivitis in adults
and children.1 Chloramphenicol and Gentamicin are most
cost effective antibiotics in Nepal and also the ones with
least side effect and hence safe to prescribe in children.
So from this study we can suggest Chloramphenicol and
Gentamicin for AIC if at all indicated especially in children.

Most General Practitioners still prescribe topical antibiotics
for most cases of AIC, a condition where only half of the
cases are likely to be due to a bacterial infection and even
they are self-limiting.8 5 A double-blind case control trial
in children by P. Rose et al and Genevieve F Oliver in two
separate studies mentions that placebo and antibiotic
had similar cure rates in AIC.1 9, 10 Kari Lee Visscher et al
and Genevieve F Oliver et al mention that inappropriate
treatment of viral conjunctivitis with antibiotics can raise
concerns of antibiotic resistance, cost-effectiveness, and
potential increase of complications due to antibiotic use.
Moreover, treatment of all red eyes with topical antibiotics
can result in a delay in diagnosis of other non infective
conditions with red eye and watering like iritis and acute
gle closure glaucoma, which if not diagnosed and treated
on time can lead to serious complications.1 2

A qualitative study of patients’ perceptions of acute
conjunctivitis performed in the UK revealed that most
patients when informed about the self limiting nature of the
disease were satisfied without antibiotic prescription.1
So whenever viral origin is suspected, we can educate the
patients regarding its self-limiting nature and side effects of
unnecessary prescription of antibiotics.

CONCLUSION

When a patient with red eye presents, a focused history
and ocular examination can make a clinical diagnosis of
acute infective conjunctivitis and rule out any red flags
that might indicate a different and potentially more serious
condition. Routine Gram’s stain, culture and sensitivity
are not recommended due to low positive yield, cost and
time involved in doing so. Even for suspected bacterial
cases, ophthalmic antibiotics should be prescribed
judiciously and only if there is no improvement after 2 to
3 days of conservative management since it is found to
resolve spontaneously without any serious complications.
Chloramphenicol and Gentamicin are drugs of choice
because they have highest sensitivity rate, least side effect, cost effective and safe in children.

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REFERENCES


