



Original Research Article

Incidence and Prevalence of Microbial Agents in Patients, Suffering from Chronic Dacryocystitis, and their Antimicrobial Susceptibility Pattern attending in Tertiary Care Hospital, at Bettiah, Bihar

Authors

Dr Sanjay Kumar¹, Dr S. N. Singh², Dr Satyendu Sagar^{3*}

¹Tutor, Department of Microbiology, Government Medical College, Bettiah

²Professor and HOD, Department of Microbiology, Government Medical College, Bettiah

³Assistant Professor, Department of Microbiology, Nalanda Medical College, Patna

*Corresponding Author

Dr Satyendu Sagar

Assistant Professor, Department of Microbiology, Nalanda Medical College, Patna, India

Abstract

Objective: Present study was conducted to evaluate the trends of Microbial agent in patients with chronic Dacryocystitis and their antimicrobial susceptibility pattern.

Material and Method: A total of 82 patients with chronic Dacryocystitis were included in the study. From all the patients a total of 82 Swab samples were taken aseptically and received in our department for culture and sensitivity testing. Culture and sensitivity tests were done according to CLSI guidelines.

Result: A total of 72 pure cultures isolated from 82 samples, the most common organism found were *Staphylococcus aureus* in 32 cases (44.44%) followed by Coagulase Negative *Staphylococcus* (CONS) in 14 cases (19.44%). Amongst *S. aureus* isolates, aminoglycoside group of antibiotics i.e. Amikacin, and Tobramycin showed a good sensitivity of 75%, and 81.25%. Against betalactam group of antibiotics like cefazolin (68.7%) and cefotaxime (65.6%) were sensitive. Moxifloxacin showed 100% sensitivity when compared to ciprofloxacin (87.5%). Chloramphenicol was found to be least effective drug with only 53.1% sensitivity. For *S. pneumoniae* cefotaxime and cefazolin gave a high sensitivity of 100% followed by Moxifloxacin 100%, Ciprofloxacin 83.3% and Chloramphenicol showed a sensitivity of 66.6%. Amongst Gram negative Bacilli (GNB) maximum isolates (100%) were sensitive to Ceftazidime which is a third generation Cephalosporin with a good antipseudomonal activity followed by Cefotaxime(87.5%). Sensitivity to Moxifloxacin was observed in 87.5% isolates compared to 50% sensitivity against Ciprofloxacin. Amikacin and Tobramycin was equal effective in 68.7% of isolates.

Conclusion: *Staphylococcus* is the major cause in pathogenesis of chronic dacryocystitis, and *Candida albicans* in few cases which might to be due to reduced immunity.

Keywords: *Staphylococcus aureus*, Dacryocystitis, Chloramphenicol, Lacrimal drainage system.

Introduction

Chronic Dacryocystitis is the inflammation of Lacrimal drainage system or Lacrimal sac, usually

occurs after obstruction of the Lacrimal outflow system, converts the Lacrimal sac a reservoir of infection and frequently caused by bacteria. This

can produce chronic watering (tearing) from eye i.e. epiphora and ocular injection. Gentle pressure over the Lacrimal sac evokes pain and reflex of pus or mucus from tear puncta. It is more common in female and individuals with lower socio-economic status with habit of pond bathing.

The common clinical presentation is epiphora followed by chronic conjunctivitis, epiphora with mass (mucocele). Nasal pathology like hypertrophied inferior turbinate, Deviated Nasal Septum, Nasal polyp, Allergic Rhinitis is common predisposing factor. Complication like corneal ulcer Lacrimal abscess and fistula may occur. Immunocompromised individuals may have fungal infection.

Material and Method

The present study was conducted in the Department of Microbiology, Government Medical College, Bettiah, West Champaran, North Bihar with the technical help of Department of EYE, during the period of March 2018 to April 2018. A total of 82 patients clinically diagnosed to have dacryocystitis who underwent clinical examination of the eyes and Lacrimal System with particular attention to drainage system were included in the study.

From all the patients, a total of 82 swab samples were taken from the material which was regurgitated through the punctum following pressure on the sac by aseptic precautions and received in our department for culture and Antimicrobial sensitivity test. Samples was inoculated on Nutrient agar, Blood Agar,

Chocolate agar, Mac conkeys agar, Sabouraud's dextrose agar and incubated aerobically overnight at 37 degree C. The isolates were identified based on standard microbiological methods including Colony character, Grams staining, Motility and biochemical tests. Antimicrobial susceptibility testing of the isolates was carried out by kirby Baur disc diffusion method. Drug Sensitivity was interpreted according to CLSI guidelines. All the media and antibiotic disk were supplied by Hai media, Mumbai.

Results

Out of 82 patients, 78 patients were female and rest 4 patients were male. Male to female ratio was 19.5:1. Out of 82 patients of chronic dacryocystitis the minimum number of 3 patients (3.65%) was in the age group of 11-20 years, and the maximum of 41 patients (50%) were in the age group of 41-50 years.

82 swab samples were inoculated in culture media, after overnight incubation at 37 degree centigrade, growth revealed pure culture in 72 cases (87.80%), mixed culture in 6 cases (7.31%) and No growth of organism was seen in 4 cases (4.87%)

The most common organism isolated were Staphylococcus aureus in 32 cases (44.44%), Coagulase Negative Staphylococcus i.e. CONS in 14 cases (19.44%) and Candida in 3 cases (4.16%). In Gram negative bacteria 16 isolates were isolated, out of which 2 isolates (2.7%) was E.coli, 4 isolates (5.55%) were Klebsiella spp. and 10 isolates (13.88%) were Pseudomonas spp.

Table – 1 Shows age and sex pattern of patients with Chronic Dacryocystitis

AGE and SEX PATTERN			
Age in years of patients with Chronic Dacryocystis	Sex		Total no. of case (%)
	Male	Female	
5-10	1	3	4 (4.87%)
11-20	1	2	3 (3.65%)
21-30	1	4	5 (6.09%)
31-40	1	15	16 (19.51%)
41-50	Nil	41	41 (50%)
51-60	Nil	8	8 (9.75%)
61-70	Nil	5	5 (6.09%)
Total	4	78	82 (100%)

Table-2 shows Organism Isolated in pure culture

Organism Isolated in pure culture N=72	Total No. of cases (%)
Staphylococcus aureus	32(44.44%)
H.Influenzae	1 (1.38%)
Pseudomonas aeruginosa	10 (13.88%)
Coagulase Negative Staphylococcus (CONS)	14 (19.44%)
Klebseilla species	4 (5.55%)
E. Coli	2 (2.77%)
Streptococcus pneumoniae	6 (8.33%)
Candida albicans	3 (4.16%)

Table-3 Shows Antimicrobial Sensitivity Pattern of Conjunctival Isolates n=72)

ANTIBIOTICS	S.aureus (n=32)	S. Pneumoniae (n=6)	Gram negative Bacilli (GNB) (n=16)
Amikacin	24(75%)	4(66.6%)	11(68.7%)
Tobramycin	26(81.25%)	4(66.6%)	11(68.7%)
Moxifloxacin	32(100%)	6(100%)	14(87.5%)
Ciprofloxacin	28(87.5%)	5(83.3%)	8(50%)
Cefotaxime	21(65.6%)	6(100%)	14(87.5%)
Cefazolin	21(68.7%)	6(100%)	11(68.7%)
Ceftazidime	0(0%)	0(0%)	16(100%)
Chloramphenicol	17(53.1%)	4(66.6%)	6(37.5%)

Antibiotic susceptibility pattern Amongst *S. aureus* isolates, aminoglycoside group of antibiotics i.e. Amikacin, and Tobramycin showed a good sensitivity of 75%, and 81.25%. Against betalactam group of antibiotics like cefazolin (68.7%) and cefotaxime (65.6%) were sensitive. Moxifloxacin showed 100% sensitivity when compared to ciprofloxacin (87.5%). Chloramphenicol was found to be least effective drug with only 53.1% sensitivity.

For *S. pneumoniae* cefotaxime and cefazolin gave a high sensitivity of 100% followed by Moxifloxacin 100%, Ciprofloxacin 83.3% and Chloramphenicol showed a sensitivity of 66.6%. Amongst Gram negative Bacilli (GNB) maximum isolates (100%) were sensitive to Ceftazidime which is a third generation Cephalosporin with a good antipseudomonal activity followed by Cefotaxime(87.5%). Sensitivity to Moxifloxacin was observed in 87.5% isolates compared to 50% sensitivity against Ciprofloxacin. Amikacin and Tobramycin was equal effective in 68.7% of isolates.

Discussion

In our study organism responsible for Chronic dacryocystis are staphylococcus aureus,

Haemophilus influenza, Pseudomonas aeruginosa, *E. Coli*, Klebsiella species, CONS, Streptococcus Pneumoniae and Candida albicans. Our observations were in accordance with Chayakul V. In this study candida albicans was also isolated. Chronic dacryocystis caused by fungi was in accordance with Ghose and Mahajan.

Conclusion

This study concludes that Staphylococcus was the commonest offender in Pathogenesis of chronic dacryocystis and some cases candida albicans found, which might be due to reduced immunity. In Antimicrobial sensitivity testing Moxifloxacin, Cefotaxime, Cefazolin and Tobramycin was effective in most of the Gram positive organism where as Ceftazidime, Moxifloxacin for Pseudomonas and Klebsiella species.

References

1. Chayakul V – Studies on Dacryocystitis and Dacryocystorhinostomy – Proceedings of X congress of Asia Pacifica Academy of Ophthalmology,
2. Mahajan VM – Acute bacterial infections of the eye: their aetiology and treatment . Br. J Ophthalmol

3. Ghose S, Mahajan VM – Fungal flora in congenital dacryocystitis. Indian J Ophthalmol
4. Schuckit MA – Alcohol and alcoholisms . In : Isselbacher KJ , Braunwald E, Wilson JD, Martin JB , Fauci AS, Kasper DL, editors. Harrison’s Principles of Internal Medicine.
5. Bennet JE- Candidiasis, In: Isselbacher KJ, Braunwald E, Wilson JD, Martin JB , Fauci AS, Kasper DL, editors. Harrison’s Principles of Internal Medicine.