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Microbial study of chronic dacryocystitis in adults

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Abstract

Aim: To study the incidence, clinical presentation, bacteriological profile with its sensitivity, treatment and complications associated with chronic dacryocystitis in adult patients in and around Karaikal.

Materials and Methods: Hundred patients of age more than twenty years of both sexes with chronic dacryocystitis with the positive regurgitation test attending our outpatient department were enrolled for the study. Patients with the history of previous sac surgery and those who failed to come for regular follow up were excluded from the study.

Results: Mean age of our patients was Forty years. Highest incidence of chronic dacryocystitis was between Forty to Fifty years and less common between Twenty to Thirty years. There were more female than male. Eight patients had bilateral involvement. Majority of our patients were fishermen and housewives. Sixty Four patients had complete block and Thirty six had partial block. Fifty Four had mucopurulent discharge, twenty four had purulent and remaining all had regurgitation of clear fluid. Four patients had associated ENT problems. Out of hundred and eight samples studied, Forty Six were positive for Staphyococcus aureus, Twenty positive for Streptococci pneumonia, Ten for Staphylococcus epidermidis, seven for Psuedomonas aeroginosa, five for Klebsiella and remaining ten showed no growth. Majority of the strains were sensitive to fluroquinolones. Fifty four patients underwent dacryocystorhinostomy and Forty Six had dacryocystectomy.

Conclusion: Bacteriological analysis of chronic dacryocystitis has been gaining importance to prevent the vision threatening complications.

Keywords: Chronic dacryocystitis, Microbiological analysis, Sensitivity

Introduction

Dacryocystitis is one of the most common diseases of the eye that is encountered in daily routine ophthalmic practice. It was known from the earlier times as "AEGYLOPS" which included all the swellings at the inner canthus. Dacryocystitis has a higher incidence among the people living in tropical countries with poor hygiene. It affects all age groups of both the sex. It may occur in acute or chronic form. The disease of the lacrimal sac is a constant menace to the delicate eyes, may be a source of infection to the corneal ulcer and its complications. It can also cause scleral abscess, orbital cellulitis, cavernous sinus thrombosis and may even endanger the life of the patient.

Aim

To study the incidence, clinical presentation, bacteriological profile with its sensitivity, treatment and complications associated with chronic dacryocystitis in adult patients in and around Karaikal.

Materials and Methods

Hundred and eight eyes of hundred patients of age more than 20 years of both sexes with chronic dacryocystitis and with the positive regurgitation test attending our outpatient department were enrolled for the study. Patients with the history of previous sac surgery and those who failed to come for regular follow up were excluded from the study.

Preoperative Evaluation: Detailed history including the age, sex, occupation, nature and duration of symptoms were recorded. Routine clinical examination was done to know the patency of the lacrimal sac and nature of discharge. ENT examination was also done to look for the nasal pathology. Bleeding time, clotting time, blood grouping and Rh typing and haemoglobin was done. Informed consent was obtained from all patients enrolled.

Specimen Collection: Lacrimal sac area was aseptically cleaned with providone iodine to avoid contamination from the surface organisms and the samples were collected with two sterile cotton swabs either by applying pressure over the sac region or by irrigating the lacrimal drainage system with sterile saline and collecting the reflux material and the samples were transferred to our microbiology lab for bacteriological study and for sensitivity testing.

Processing of Specimens

Direct Smear Examination: A thin film of specimen was smeared on a clean glass slide. After heat fixation, it was stained by Gram's method. Stained smear was screened carefully for the presence of pus cells and bacteria and their Gram reaction, size, shape and arrangement.

Culture: The specimens were cultured on dried plates of MacConkey's agar at 37◦C for 18-24 hours and on 5% sheep Blood Agar and Chocolate Agar with5-10% CO2 at 37◦C for 24-48 hours.

Antimicrobial Sensitivity Tests: The standardized Kirby-Bauer disc diffusion test of the Clinical and Laboratory standard Institute was used for testing.

Surgical Procedure: Elective surgery was done under local anesthesia after relevant investigations and physician fitness for relevant cases. 54 patients who were

under the age of 50 years underwent external dacryocystorhinostomy and remaining 46 of them underwent dacryocystectomy.

DCR: Nasal packing was done after 4% xylocaine instillation with the roller gauze soaked in 2% xylocaine jelly for patients undergoing DCR to minimize the bleeding and also to keep the nasl mucosa taut. Under local anesthesia, skin incision was made 8mm away from the inner canthus. Medial palpebral ligament was identified and cut. Lacrimal sac was dissected and freed from its attachment. Sac is retracted with periosteal elevator till lamina papyracea which is punctured with the bone punch and a large ostium as big as the thumb nail was created. Nasal mucosa was identified and incised. Lacrimal sac was also incised vertically on the medial wall and posterior flaps are approximated using 6‘0 vicryl. Patency of the lacrimal system was checked by syringing and wound closed after perfect haemostasis by sub cuticular suture with 4’0 silk.

DCT: Skin incision was made 2mm from the medial canthus, MPL identified and cut. Sac dissected out and removed. Wound closed after perfect haemostasis.

Postoperative care: For DCR patients, complete bed rest with the propped up position was recommended for the first 24 hours. Patients were instructed to avoid blowing of the nose. Oral antibiotics, NSAIDs and serration peptidase were given for five days. Nasal pack removal and dressing was done after 24 hours. Sac syringing was done gently once daily for one week. Suture removal was done after a week for all the patients. Same medications were prescribed for DCT patients also.

Observations and Results

Microbiological analysis of 108 eyes of hundred patients with chronic dacryocystitis was done in our institution and the following observations have been made in my study.

The age of the patients ranged from 20 to70 years with the mean age of 40 years. Highest incidence of the disease was observed between 40 to 50 years (32%), 24% of people were between 50 to 60 years, 20% between 30 to 40 years and the last 4% was between 20 to 30 years (Table 1).

Table 1: Age Incidence

S. No.	Age	No. of Patients
1	20-29	04
2	30-39	20
3	40-49	32
4	50-59	24
5	60-69	12
6	70 and above	08
	Total	100

There was a higher preponderance of the disease among female 68% as compared to the males 32%(Table 2). Unilateral involvement is more (92%) in my study, shown in Table 3.

Table 2: Sex Incidence

S. No.	Sex	No. of cases
1	Male	32
2	Female	68
Total		100

Table 3: Laterality

S. No.	Side Affected	No. of cases
1	Right Eye	40
2	Left Eye	52
3	Both Eye	08
Total		100

Among the study population, fishermen constitutes the major group 41%, next comes the housewives 35%, followed by farmers12%, business men 8% and professionals 4% (Table 4).

Table 4: Occupation

S. No.	Occupation	No. of cases
1	Fishermen	41
2	Housewives	35
3	Agriculture	12
4	Business	08
5	Professionals	04
Total		100

Out of 100 patients, 20 had only epiphora, 35 had mucus discharge, 24 had purulent discharge, 6 had epiphora with recurrent conjunctivitis, 4 had mucocele, 10 had epiphora with cataract and 1 had epiphora with corneal ulcer (Table 5).

Table 5: Clinical Presentation

S. No.	Presenting Features	No. of cases
1	Epiphora only	20
2	With mucus	35
3	With purulent discharge	24
4	With recurrent conjunctivitis	06
5	Epiphora with mucocele	04
6	Epiphora with cataract	10
7	With corneal ulcer	01

Table 6 shows the associated ENT problems present in the patients. 2 had DNS, 1 had nasal polyp and 1 had atrophic rhinitis.

Table 6: Associated ENT Conditions

S. No.	ENT Conditions	No. of cases
1	DNS	02
2	Nasal polyp	01
3	Atrophic Rhinitis	01

Out of 100 patients, 64 had complete block and remaining 36 had partial block with mucus(Table 7). Majority of them had mucus discharge(56%), 24 had purulent and 20 had clear fluid (Table 8).

Table 7: Nature of Block

S. No.	Nature of Block	No. of cases
1	Complete Block	64
2	Partial Block with mucus	36
Total		100

Table 8: Nature of Regurgitated Fluid

S. No.	Nature of Regurgitated fluid	No. of cases
1	Clear Fluid	20
2	Mucus	56
3	Purulent Discharge	24
Total		100

Out of 108 samples studied, 46 was positive for staphylococcus aureus, 20 had streptococcus pneumonia, 10 had staphylococcus epidermidis, 7 had pseudomonas aeruginosa, 5 had klebsiella pneumonia and 20 samples showed no growth(Table 9).

Table 9: Bacteriological Study

S. No.	Organisms	No. of eyes
1	Staphylococcus aureus	46
2	Streptococcus pneumoniae	20
3	Staphylococcus Epidermidis	10
4	Pseudomonas aeruginosa	07
5	Klebsiella pneumonia	05
6	No growth	20
Total		108

Regarding antibiotic sensitivity, fluoroquinolone was highly effective against all the organisms reported, next comes aminoglycosides mainly Tobramycin. Chloramphenicol was not effective against gram negative organisms (Table 10).

Table 10: Antibiotic Sensitivity

S. No.	Organisms	No. of cases	CH	G	T	C	O
1	Staphlylococcus aureus	38	4	4	6	11	13
2	Streptococcus pneumonia	20	2	2	4	4	8
3	Staphlococcus epidermidis	10	1	1	2	2	4
4	Pseudomonas aeruginosa	07	0	1	2	2	2
5	Klebsiella pneumonia	05	0	1	1	1	2

In my study 54 patients were taken up for DCR and the remaining underwent DCT because of old age and failed DCR(Table 11).

Table 11: Surgical Procedure

S. No.	Surgical Procedure	No. of cases
1	Dacryocystorhinostomy	54
2	Dacryocystectomy	46
Total		100

Discussion

Chronic dacryocystitis is the chronic inflammation of the lacrimal sac, frequently caused by bacteria. Obstruction of the nasolacrimal duct converts the sac as a reservoir of infection and it possess a constant threat to the cornea and the surrounding orbital tissue. The study was conducted to find out the clinic bacteriological profile of chronic dacryocystitis in adults. 80% of the samples were positive for bacterial growth. Gram positive organisms were most commonly isolated. Staphylococci was found to be the most common Gram positive organism (48%), followed by Streptococci 20%. Gram negative organisms were isolated from 12 samples. These findings are similar to the one found by Hartikainen J. et al,[1] who had 84% positive culture growth in their study with the commonest organism being Staphylococci (48%). Similar data had been published in Sudanese Journal of Ophthalmology by Khevna Patil.[2]

Prakash R et al[3] in 2015 found in his study that Gram positive organisms were more common than Gram negative in cases of chronic dacryocystitis. Brook I and Frazier E.H.[4] and Pradeep A.V.[5] also proved that Staphylococcus is the commonest organism(45%) isolated from their study population of 62 patients. Devendra Kumar et al[6] quoted in his study that Staphylococcus Epidermidis was the common isolate and Chloramphenicol was the sensitive drug.

Antibiotic sensitivity test in my study showed that fluroquinolones were more effective for the treatment of chronic dacryocystitis and Chloramphenicol was not effective against Gram negative organisms.

This study showed female preponderance 68% which correlated with Chaudry IA.[7] There is relatively a high incidence of the disease on Left side(52%) in this study. This correlates to the findings of Mandal R, Banerjee AR et al[8] who also reported increased left sided blocks.

More than half of the study population underwent DCR. DCR is definitely a more physiological procedure than DCT. However, certain clinical conditions warrant only for dacryocystectomy.

Conclusion

Chronic dacryocystitis is the most commonly encountered adnexal disease in the routine ophthalmic practice. Since 80% of my samples showed positive culture report, screening for duct patency and bacteriological analysis of chronic dacryocystitis is very important to prevent the vision threatening complications. Removal of the infected sac by DCR or DCT before any intra ocular surgery is mandatory to

prevent postoperative endophthalmitis. Knowledge of the organism and its antibiotic sensitivity may help in deciding the proper antibiotic for ocular surgery.

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