Research Article

Clinicobacteriological and histopathological study in chronic dacryocystitis

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Abstract

Introduction: Study of patients attending tertiary care hospital in Guwahati, Assam. **Aim**: to study bacteriological profile, histopathological changes in the lacrimal sac and epidemiological characteristics in ch. dacryocystitis. **Materials and Methods**: 60 clinically established chronic dacryocystitis cases who did not use any antibiotics eye drops or stopped using drops were taken up for the study in a tertiary care hospital in GUWAHATI, Assam from July'07 to June'08. Regurgited materials from lacrimal sac were subjected to Gram stain and KOH smear and to culture for bacterial pathogens. Lacrimal sac samples during daryocystectomy surgery and posterior flaps of lacrimal sac during dacryocystorhinostomy surgery were collected, preserved and sent for histopathological examination. **Results:** Out of 60 cases bacteriological etiology was established in 52 cases (86.67%) while 8 cases (13.33%) were sterile. Among the isolated bacreria, the commonest organism was staphylococcus aureus (28.33%) followed by streptococcus pneumonae (23.33%). Histopathological study showed 100% cases were non suppurative. The commonest type was nonspecific chronic dacryocystitis 22 (36.67%) followed by hyperplastic type 18(30%), fibrotic type 11(1833%) etc. Most of the cases were in the 4th decade of life14 (23.33%), were females 46(76.66%), housewives 38(63.33%) and belonged to lower socio-economic class 47(78.33%). **Conclusion:** Bacteriological examination showed Bacterial growth in 86.67% and in 13.33% cases it was sterile culture. Gram positive isolates were 60% including Staphylococcus aureus as the most common organisms (28.33%) followed by streptococcus pneumonae (23.33%) and Gram negative isolates were 26.67% among which Pseudomonas aeruginosa were 10%, E.coli were 10%. Most common change was found as non-specific chronic dacryocystitis (36.67%).Most of the cases were female (76.66%), housewives (63.33%), belonged to lower socio-economic class (78.33%) and in the 4th decade of age(23.33%).

Key Word: chronic dacryocystitis, clinicobacteriology, histopathology.

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INTRODUCTION

DACRYOCYSTITIS

Inflammation of the lacrimal sac and duct –is an unpleasant disease, partly because of the troublesome and conspicuous symptoms it may cause, partly because it has little tendency to resolve and its adequate treatment presents considerable problem. Stasis of the content of the lacrimal sac is usually the etiological factor and some of the causes for the stasis are (1) anatomic malformation, (2) infections in adjacent tissues such as the nose and paranasal sinuses or the conjunctiva, (3) direct. Infection of the lacrimal sac by tuberculosis, trachoma and mycosis such as actinomycosis (steptothrix) and rhinosporidosis. Dacryocystitis of non-specific origin infect may be classified under two broad headings-chronic and acute. Chronic dacryocystitis is the commoner. Dacryocystitis in infants occur as a result of an obstruction at the lower end of nasolacrimal duct which may be developmental or acquired in origin. Etiological diagnosis on the basis of clinical features alone is not possible. It is not justifiable, that treatment should be initiated on the basis of the use of wide sprectum antibiotics or multiple chemotherapeutic agents. It has to be made in anticipation that the organism may be sensitive to any one the antibiotics. Studies show non-specific inflammatory changes are most common. It has therefore become

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mandatory that, while keeping in mind the most prevalent agent in the region, history of the patient coupled with the clinical features has to be correlated with the results of the laboratory investigations so that specific and adequate treatment can be initiated. Since majority of our population live in rural areas where microbiological and pathological studies are not possible, it is more important to know the causative organisms in ch. Dacryocystitis, their succeptibility to the commonly used antibiotics and the histopathological changes following the surgical intervention.

MATERIALS AND METHOD

Study was conducted on 60 patients who attended and treated in the Regional Institute of Ophthalmology, a tertiary care hospital in Guwahati, Assam during the period from 1st July 2007 to 30th June 2008. Sterile swab sticks were used to collect regurgited material from lacrimal sac. Collected materials were subjected to Gram staining, KOH smear and culture for bacterial pathogens. For culture -Blood agar, McConkey agar, Nutrient agar, Chocolate agar Medias were used. After proper examination and having confirmed that the case was chronic dacryocystitis, 3 wabs of the regurgited material were collected at a time, first one for KOH smear to see if any fungus was present or not, the second one for making smears for Gram staining and the last swab for culture in the medias mentioned above. Gram positive organisms were seen as violet while Gram negative organisms were appeared pink. Blood agar and MacConkey's agar were routinely used as culture media. All the inoculated Medias were incubated at 37degree C. Overnight in the incubator. If no growth was obtained, then the plates were incubated for another 24hrs. Antibiotic sensitivity test was done by standard method (Disc diffusion). Sample for histopathological examination was taken as lacrimal sac following dacryocystectomy surgery and small piece of posterior flap of lacrimal sac during dacryocystorhinostomy surgery. Slides were prepared and stained with Haematoxylene and Eosin.

RESULTS

A total of 60 patients with the clinical diagnosis of dacryocystitis were enrolled for the study. An epidemiological characteristic of the population is given in Table 1. A maximum of patients were from the age group 41-50 years followed by patients in the age group 31-40 years. There was female predominance, which is evident from the table 1.The occupation profile of the study group mainly consisted of housewives (63.33%) followed by farmers (16.66%). 78.33% (47 out of 60) patients hailed from lower socio-economic status. Table 1 shows the epidemiological characteristics. Bacterial etiology was seen in 52/60 patients presenting with chronic dacryocystitis. No organism was isolated in 8 patients. The details of bacterial etiology are given in Table 2. Among the isolated bacteria, 36(60%) were Gram- positive (GPC) cocci and 16(26.67%) were Gram –negative (GNB) bacilli. Staphylococcus aureus was the most common GPC followed by Streptococcus Pneumoniae and Staphylococcus Epidermidis. Among GNB, the most common was Pseudomonas Aeruginosa, followed by E. coli and Klebsiella Pneumoniae. A summary of the bacterial pathogens isolated during the study is shown in Table 3. Antibiotic sensitivity patterns of Gram-positive cocci and Gram-negative bacilli are shown in Table 4 and Table 5 respectively. Overall sensitivity testing against all bacteria shows most effective antibiotic against all organism is Ciprofloxacin (80.76%), followed by Gatifloxacin (78.84%), Ofloxacin(69.23%), Gentamicin (67.30%), Tobramycin (61.53%), Norfloxacin (59.61%), Cephalexin (59.61%), Ampicillin (46.15%), Chloramphenicol(42.30%), Tertracycline(44.23%) and Cloxacillin(32.69%). Table 6 shows the histopathological types in Chronicdacryocystitis. The commonest type is non-specific chronic dacryocystitis followed by hyperplastic type, fibrotic type, follicular type, dacryocystitis pseudoglandularis and catarrhal type.

Table 1: Epidemiological Characteristics of Patients

Demographics Indicator	No (%)	
Age(in years)	<20	2 (3.33%)
	21-30	10 (16.66%)
	31-40	12 (20%)
	41-50	14 (23.33%)
	51-60	13 (21.66%)
	>60	9 (15%)
Sex	Female	46 (76.66%)
	Male	14 (23.33%)
Occupation	Housewives	38 (63.33%)
	Farmers	10 (16.66%)
	Service	4 (6.67%)
	Students	4 (6.67%)

Socio-Economic Status	Others	4 (6.67%)
	Upper Group	13 (21.66%)
	Lower Group	14 (23.33%)
	41-50	13 (21.66%)
	51-60	47 (78.33%)

Table 2: Bacterial etiology responsible for chronicdacryocystitis

Types of Bacteria	Number (%)
Total Isolates	52 (86.67%)
No OrganismsOr Sterile Culture	8 (13.33%)

Table 3: bacterial pathogens

Number Of Bacterial Isolates	Number (%)
Total Gram Positive cocci	36(60%)
Staphylococcus aureus	17(28.33%)
Straphlyococcus epidermidis	5(8.33%)
Streptococcus pneumonia	14(23.33%)
Total Gram Negative bacilli	16(26.67%)
Pseudomonas aeruginosa	6(10%)
Kleb. Pneumoniae	4(6.67%)
E. coli	6(10%)

Table 4: antibiotic sensitivity pattern of gram - positive cocii (isolates)

Bacteria(Number)	Antibiotics Sensitive										
	Genta	Tetra	Ceph	Cipro	Ampi	Cloxa	Norflo	Oflox	Gati	Chlor	Tobra
S. aureus (17)	12	4	11	12	4	5	9	11	11	5	8
	70.58%	23.53%	64.70%	70.58%	23.53%	35.29%	52.94%	64.70%	64.70%	29.41%	47.05%
S. pneumoniae (14)	7	6	10	11	11	7	5	6	12	6	9
	50%	42.86%	71.42%	78.57%	78.57%	50%	35.71%	42.86%	85.71%	42.86%	64.28%
S. epidermidis(5)	3	4	3	3	2	2	2	3	3	3	3
	60%	80%	60%	60%	40%	40%	40%	60%	60%	60%	60%

Table 5: Antibiotic Sensitivity pattern of Gram - Negative bacilii (isolates)

Bacteria(Number)	Antibiotics Sensitive										
	Genta	Tetra	Ceph	Cipro	Ampi	Cloxa	Norflo	Oflox	Gati	Chlor	Tobra
P.aerugi(6)	3	2	2	6	2	0	5	6	5	3	3
	50%	33.33%	33.33%	100%	33.33%	0%	83.33%	100%	83.33%	50%	50%
K.pneu(4)	4	3	2	4	2	0	4	4	4	1	4
	100%	75%	50%	100%	50%	0%	100%	100%	100%	25%	100%
E.Coli(6)	6	4	3	6	3	3	6	6	6	4	5
	100%	66.67%	50%	100%	50%	50%	100%	100%	100%	66.67%	83.33%

Table 6: Histopathological types in chronic dacryocystitis

Histopathological types			No. of Cases	Percent
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Suppurative	A)Non Granulomatous	1.Non specific dacryocystitis	22	36.67%
		2.Hyperplastic type	18	30%
		3.Fibrotic type	11	18.33%
		4.Dacryocystitis pseudoglandularis	1	01.67%
Non Suppurative	B)Granulomatous	5.Follicular Type	7	11.66%
		6.Chronic catarrhal type	1	01.67%
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		Total	60	100%

Genta: Gentamicin, Tetra: Tetracycline, Ceph: Cephalexin, Ampi: Ampicillin, Cloxa: Cloxacillin, Norflo: Norfloxacin, Oflox: Ofloxacin, Gati: Gatifloxacin, Chlor: Chloramphenicol, Tobra: Tobramycin

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DISCUSSION

In the present study ch. Dacryocystitis is seen in all age group but maximum number of patients were in the age group of 4th decade (23.33%) followed by 5th decade (21.66%) as observed by other authors(1,2,3). Females were affected more (76.66%) male (23.33%) in our study as reported by others (1, 4). Incidence of dacryocystitis was found to be more among housewives in this study which was stated by others (1). The present study showed 78.33% patients belonged to lower economic group and 21.66% belonged to upper class. Similar findings were reported by other authors (1, 2,). In the present study, among Gram-positive cocci Staphylococcus species were the predominant organism (36.67%) including Staphylococcus aureus (28.33%) and Staphylococcus epidermidis (8.33%). Streptococcus pneumoniae were (23.33%). Gram-negative bacilli were found to be less commonly occuring cause of adult dacryocystitis. Among 26.67%Gram-negative bacilli, 10% were Pseudomonas aeruginosa, 10% were E. coli and 6.67% were Klebsiella pneumonia. Similar findings were reported by many others (1, 3, 5, 6, 7, 8).In present study 13.33% showed sterile culture which was similar to others (3, 5). While examining the sensitivity of various bacteria against commonly used antibiotics, we found that the most sensitive antibiotics were Ciprofloxacin(80.76%), Gatifloxacin (78.84%), Ofloxacin (69.23%), Gentamycin (67.30%), Tobramycin (61.5%), as observed by others (6,9,10). In our study commonest histopathological finding was non-specific chronic dacryocystitis (36.67%) followed by hyperplstic type (30%). Less common were fibrotic (18.33%), follicular (11.66%), dacryocystitis pseudoglandularis and catarrhal type (1.67%) each. Almost similar findings were stated by others (1, 5). In conclusion, this study of 60 cases carried out at Guwahati, Assam shows that most commonly affected patients were in the age group of 41-50 years, female, housewives and belonged to lower socio-economic class. Bacteriological study showed that Staphylicoccus aureus was the most common organism among Gram-positive isolates and the most effective antibiotics were Gentamycin and Fluoroquinolones. Among the histopathological changes, common changes were non-specific chronic dacryocystitis, hyperplastic type, fibrotic type etc.

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