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Clinical Study of Dacryocystits, Its Microbiological Profile and Response to Management in a Tertiary Hospital

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Abstract: ***Despite the long-standing recognition of lacrimal symptoms summarized in the historical perspective, relatively little information is available concerning the epidemiology of acquired lacrimal outflow obstruction. A current population-based study providing this information would be useful in terms of determining the appropriate allocation of health care research and care delivery resources directed toward lacrimal obstruction. The present study is undertaken to evaluate the current concepts of the etiology ,clinical characteristics ,pathogenesis, microbiological workup, its management, find its complication and sequele. Sample size was 289 cases belonging to all age groups and all types of dacryocystitis.***

Keywords: Dacryocystitis, dacryocystorhinostomy (DCR), congenital nasolacrimal duct obstruction (CNLDO)

1. Introduction

The lacrimal excretory system is prone to infection and inflammation for various reasons. This mucous membrane-lined tract is contiguous with the conjunctiva and nasal mucosa, which are normally colonized with bacteria. The functional purpose of the lacrimal excretory system is to drain tears from the eye into the nasal cavity. Stagnation of tears in a pathologically closed lacrimal drainage system can result in dacryocystitis.

It occurs in all age groups [1]. Dacryocystitis has worldwide distribution having higher incidence among people living in tropical countries with poor hygienic condition –Truce 1900.

Acquired dacryocystitis can be acute or chronic. Acute dacryocystitis is heralded by the sudden onset of pain and redness in the medial canthal region. An insidious onset of epiphora is characteristic of chronic inflammation or infection of the lacrimal sac.

A special form of inflammation of the lacrimal sac is that of congenital dacryocystitis, the pathophysiology of which is intimately related to the lacrimal excretory system embryogenesis.

Dacryocystitis has long been noted to occur more frequently on the left side than on the right side. In many instances, the nasolacrimal duct and lacrimal fossa formed a greater angle on the right side than on the left side.

The common complications of dacryocystitis can be conjunctivitis, corneal ulceration, scleral abscess, post-op panophthalmitis, facial cellulitis, orbital cellulitis, cavernous sinus thrombosis, septic meningitis and brain abscess which may endanger the vision and/or life of the patient.

The present study is undertaken to evaluate the current concepts of the etiology, clinical characteristics, pathogenesis, microbiological workup, its management, find its complication and sequele.

2. Materials and Methods

This was a hospital based prospective study conducted between Jan 2017 to JUNE 2018 at Dr.S.C.G.M.C Hospital. Total 289 cases were enrolled.

Aims and Objectives

1) To study the various modes of presentation of dacryocystitis.
2) To study the age and sex distribution of dacryocystitis.
3) To define the spectrum of pathogens causing dacryocystitis and their culture sensitivity profile.
4) To study the clinical course, management and outcomes of dacryocystitis.

3. Results

A total of 289 patients were examined during the period Jan 2017- June 2018 that were clinically and microbiologically diagnosed as having dacryocystitis.

Table 1: Age and sex distribution of the patients

Age group	Male		Female		Total	
	No.	%	No.	%	No.	%
0- 10	11	12.64	11	5.45	22	7.61
Nov-20	0	0	2	0.99	2	0.7
21- 30	1	1.15	9	4.45	10	3.46
31- 40	9	10.35	20	9.9	29	10.03
41- 50	11	12.64	19	9.4	30	10.38
51- 60	15	17.24	42	20.8	57	19.72
61- 70	28	32.18	71	35.15	99	34.25
71- 80	12	13.79	21	10.4	33	11.41
81- 90	2	2.29	5	2.48	7	2.42
Total	87	100	202	100	289	100
Mean+/-S.D.	52.77(+/-21.46SD)		54.06(+/-18.24SD)			
Significance	P=0.54				-	

The above table describes the mean ages of males and females were 52.77(+/-21.46) yrs and 54.06(+/-18.24) years respectively. The difference between the mean age of the sexes was not statistically significant ($P > 0.05$)

Table 2: Clinical types of dacryocystitis

Sr. No.	Clinical Types of dacryocystitis	No. of patients	%
1	Congenital	23	8%
2	Acute	44	15.20%
3	Chronic	222	76.80%
	Total	**289**	**100%**

The above table shows that chronic dacryocystitis is the most common (76.8%) type of dacryocystitis followed by acute (15.2%) and congenital (8%).

Table 3: Bacterial pathogens recovered from Acute and Chronicdacryocystitis

S.No.	Bacterial Pathogen Isolated	Acute Dacryocystiyis	Chronic Dacryocystitis
		No.(%)	No.(%)
1	Acinetobacter	1 (2.3)	9 (4)
2	CONS	13 (29.5)	31 (14)
3	E.Coli	6 (13.6)	14 (6.3)
4	Pseudomonas	4 (9)	11 (5)
5	Staph.aureus	17 (38.7)	62 (28)
6	Streptococcus	3 (6.8)	17 (7.6)
7	Citrobacter	O (0)	9 (4)
8	No growth	O (0)	69 (31)
	Total	44	222

In acute dacryocystitis, Staph. aureus (38.7%) was isolated as the predominant bacterial pathogen, whereas in chronic dacryocystitis, 31% samples shows no growth. The reason for no growth may be they had received treatment for long.

Staph. aureus (28%) followed by CONS (14%) were the predominant bacterial pathogen isolated from chronic dacryocystitis cases.

Table 4: Comparison of distribution of percentages of antibiotic sensitivity among Gram positive and Gram negative organisms

Sr. No.	Drug	Gram +ve N=155		Gram –ve N=57		Significance level
		No. of Organism	%	No. of Organism	%	
1	GATIF	138	89	32	56.1	P<0.0001
2	AMIKA	45	29	12	21	P=0.245
3	CIPRO	82	52.9	31	54.3	P=0.85
4	VANCO	151	97.4	16	28	P<0.0001
5	OFLOX	72	46.4	19	33	P=0.08
6	CEFOTAXIM	55	35.4	20	35	P=0.95
7	GENTA	64	41.2	49	85.9	P<0.0001

The comparison of sensitivity of antibiotics between gram positive and gram negative organisms is shown in the above table. Gram positive bacteria were more sensitive to gatifloxacin and vancomycin. The above sensitivities were statistically very highly significant (P<0.001). The antibiotic gentamycin had more sensitivity with gram negative than gram positive organisms and the sensitiviti was statistically significant (P<0.0001). The antibiotics amikacin and cefotaxim had no significant sensitivity with either gram positive or gram negative organisms (P>0.05).

Table 5: Success rate of surgery

Sr. No.	Surgery done	No. of cases	Success rate	%
1.	DCT	182	180	98.9
2.	DCR	62	62	100
3.	PROBING	17	16	94.1

Out of 182 DCT surgery performed, 2 cases failed because of wound site abscess formation while all DCR surgeries were successful. 16 out of 17 probing cases were successful.

4. Discussion

In our study the highest incidence was seen in 61- 70 years of life. The mean ages of presentation in males and females were 52.77(+/-21.46) yrs and 54.06(+/-18.24) yrs respectively. (p> 0.05) which was statistically not significant. R.Dalgleish (1967) stated that 35- 40 years was the earliest expected age of onset of acquired idiopathic nasolacrimal duct obstruction. [2]

Bharathi MJ et al, [3] in his study found overall female to male ratio was 3.9:1 and females (80.9%) were more in number than males (19.1%).

In our study of 289 cases, 77 (26.6%) cases showed no growth. 155(53.5%) cases show gram positive organisms while 57 (19.6%) cases shows gram negative organisms.

The commonest organism encountered was Staphylococcus (29.7%), followed by CONS coagulase negative staph. Aureus (16.9%). Least common was citrobacter (3.1%).

Brook I and Frazier E. H. (1998) [4] in their study of 62 cases, found Staphyloccus as the commonest organism in 28 (45%) patients.

The analysis of invitro susceptibility showed, that Gram positive bacteria were more sensitive to vancomycin (97.4%) and gatifloxacin (89%). The above sensitivities were statistically very highly significant (P<0.001). Similar results were found in a study done on chronic dacryocystitis by Mandal R et al in 2008 [5] and Prakash R. et al in 2012 [6]

Out of 182 DCT surgery performed, 2 cases failed because of wound site abscess formation. 16 out of 17 probing cases were successful.

Total 62 DCR surgeries were performed, all of them were successful when followed to an interval of minimum 6 months.

Beigi B. Et al (1998) [7] in their study, found dacyocystorhinostomy to be successful in 83% cases.

5. Conclusion

Dacryocystitis is an important subject in clinical ophthalmology, because it being the common clinical entity encountered in routine ophthalmic practice.

The cause for obstruction is in doubt in majority of the cases and the etiologic assumptions are just hypothetical, organisms in the conjunctiva have etiological role in the setting up of inflammation. Role of inflammation in the neighbourhood sinuses and in nasal cavity play an important role in the pathogenesis. Therefore this subject needs an extensive study to solve the enigma for the etiology of dacryocystitis.

Most satisfactory fact in this subject is that there is wide range of treatment modalities available for all the clinical form of the disease and they are quite successful. DCR is common operation done for this disease, success rate being very high.
Prompt surgical treatment helps in prevention of drug resistance and other complications.

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