

## A clinical study of dacryocystitis

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### Abstract

**Introduction:** Dacryocystitis is an inflammation of the lacrimal sac and duct. Epiphora is the most common presentation of chronic dacryocystitis. This clinical study was undertaken to know the mode of presentation of dacryocystitis, spectrum of pathogens and the histopathological picture in chronic dacryocystitis patients who underwent dacryocystectomy.

**Materials and Methods:** Studied the various modes of presentation of dacryocystitis cases in respect to their distribution of age, sex, occupation, socio economic status, laterality, presenting complaints, clinical types of dacryocystitis and bacteriological study. The patients with gross nasal pathology were excluded from the study.

**Results:** Out of 60 patients, chronic dacryocystitis were 46(76.7%), acute cases 8(13.3%) and congenital cases were 5(10%). Most commonly seen between 41-50 years of age group and predominately in females (71.7%), house wives 25(42%), lower socioeconomic status 33(55%), dacryocystitis showed left sided affection 32(53.33%) more than right. The most common presenting complaint was epiphora in 38 patients (63.3%) and common microorganisms were *Staphylococcus aureus* 24(40%). Histopathological results showed 85.7% non-specific chronic dacryocystitis.

**Conclusion:** As the nasolacrimal obstructions are the initiating event in establishing infection, it is important to know about microbial organisms responsible for dacryocystitis as it is one of the predisposing factors for postoperative endophthalmitis.

### Introduction

Dacryocystitis is an inflammation of the lacrimal sac and duct. It may be classified as congenital or acquired. Acquired dacryocystitis is of 2 forms: acute and chronic. The most common cause of epiphora (87%) is chronic dacryocystitis.<sup>1</sup> It occurs in all age groups, the mean age group being 60-70 years.<sup>2,3</sup> Congenital dacryocystitis is caused due to the developmental obstruction of nasolacrimal duct by epithelial debris or a membranous occlusion of the lower third of nasolacrimal duct. In acute dacryocystitis patients complain of watering, pain followed by swelling in the lacrimal sac region with oedema spreading over the lower lid and cheek. In acute dacryocystitis the most commonly isolated organisms are *Staphylococcus* species.<sup>4</sup> Chronic dacryocystitis may be caused due to congenital abnormality, chronic sinus disease, involutional stenosis, naso-orbital trauma, granulomatous diseases such as Sarcoidosis, Tuberculosis, Wegener's granulomatosis. Involutional stenosis affects women twice as frequently as men.<sup>3</sup> Acquired nasolacrimal duct stenosis occurs from gradual thickening of facial bones in older age group.<sup>5</sup> Inflammatory causes includes bacterial and viral. The complications of chronic dacryocystitis include unilateral conjunctivitis, corneal ulceration, scleral abscess, panophthalmitis, facial cellulitis, orbital cellulitis, septic

meningitis, cavernous sinus thrombosis and brain abscess which may endanger the life of a person.

### Objectives

To study the various modes of presentation of dacryocystitis, to define the spectrum of pathogens causing dacryocystitis and to analyze histopathological findings of chronic dacryocystitis, in patients who underwent dacryocystectomy.

### Materials and Methods

The study on dacryocystitis was carried out in the department of Ophthalmology, M.V.J. Medical College & Research Hospital, Hoskote, over a period of 2 years from November 2012- October 2014. A total of 60 clinically diagnosed cases of dacryocystitis attending Ophthalmology out-patient department were taken for the study. All Patients with dacryocystitis (acute, chronic and congenital) were included & patients with dacryocystitis due to gross nasal pathology were excluded from this study. After taking informed consent, demographic details and detailed history were taken. Detailed routine clinical examination was done to know the nature of discharge, fullness in the lacrimal sac area, dye disappearance test, Jones fluorescein dye test, lacrimal syringing and other ocular examination were done

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Table 1

Bacteriological study	Acute		Chronic		Congenital		Total	
	No	%	No	%	No	%	No	%
Staphylococcus aureus	3	37.5	18	39.13	3	50	24	40
Staphylococcus epidermidis	-	-	14	30.43	-	-	14	23.33
Streptococcus pneumoniae	-	-	8	17.39	-	-	8	13.33
Pseudomonas aeruginosa	4	50	2	4.35	-	-	6	10
No growth	1	12.5	4	8.70	3	50	8	13.33
Total	8	100	46	100	6	100	60	100

(Anterior segment and posterior segment evaluation). In all the cases, conjunctival swab from the lower fornix was sent for identification of the organism and its culture and sensitivity. I could do dacryocystography in few patients with chronic dacryocystitis and few others refused for various reasons. DCG was done in radiology department using radioopaque, urograffin dye (76%) under the guidance of the radiologist.

Congenital dacryocystitis cases were advised topical antibiotics and massaging over the lacrimal apparatus area. Even after conservative management for more than 1 year if watering persisted probing was done under general anaesthesia. Acute dacryocystitis patients were treated with topical and systemic antibiotics, analgesics, hot fomentation. If sinus formation or fistula present then the pus was drained out. For chronic dacryocystitis patients elective surgery was planned and scheduled after relevant systemic investigation, ENT consultation, physician opinion regarding fitness for surgery and local anaesthesia. In elderly patients & patients with thick fibrosed sac with no sac lumen dacryocystectomy was performed and for young and middle aged patients with chronic dacryocystitis dacryocystorhinostomy was performed. Excised lacrimal sac was sent for histopathological examination.

## Results

Out of 60 patients 30% of them belonged to age group 41-50 years (youngest being 6 months old and the oldest was 71 years). 43(72%) were females and 17(28%) were males.

Majority were house wives 25(42%) followed by laborers 12(20%), farmers 10(17%), preschool children 6(10%), teacher 3(5%), businessman 2(3%) and student and attender 1 each (2%). 33 patients (55%) belong to lower socioeconomic status and 25 patients (42%) belong to middle socioeconomic status and 2 patients belong to upper socioeconomic class.

In our series of patients, 32(53.33%) had left sided affection, 23(38.33%) had right sided affection and 5(8.33%) patients were bilaterally affected, hence showing that the left side is more affected than the right.

38(63.3%) cases complained of epiphora, 9(15%) epiphora with swelling, 7(11.7%) epiphora with discharge, and 6(10%) with redness. 46(76.7%) cases were chronic dacryocystitis, 8(13.3%) were acute dacryocystitis and 6 cases (10%) were congenital dacryocystitis. Out of 52 cases of congenital and chronic dacryocystitis, 37(71.15%) are with complete block, 15(28.85%) with partial block and in

that 30(57.69%) patients had mucopurulent discharge and 22(42.31%) patients had clear fluid regurgitation.

In this study the commonest organism encountered was *Staphylococcus aureus* 24(40%), followed by *Staphylococcus epidermidis* 14(23.3%), *Streptococcus pneumoniae* 8(13.3%) and *Pseudomonas aeruginosa* 6(10%). 8 cases (13.3%) had no growth.

## Bacteriological study in each type of dacryocystitis

Out of 46 chronic dacryocystitis cases, 21 patients underwent dacryocystectomy and the excised sac was sent for histopathological examination of which 18 cases (85.7%) showed features consistent with non-specific chronic dacryocystitis and 3 cases (14.3%) showed fibrotic features. In our case study, majority patients 49(81.67%) had no associated nasal pathology but 7 patients (11.66%) had inferior hypertrophied turbinate and 4 patients (6.67%) had deviated nasal septum.

## Discussion

The present study shows highest incidence in 4th decade (30%) & more commonly found in females (71.7%) which is similar to a study by Chaudhry IA et al.,<sup>6</sup> The relatively high incidence of disease on left side (53.3%) correlates well with P. Shiva Reddy<sup>7</sup> studies. Most of the females come from middle and lower income group. In our study the main presenting feature is epiphora (55%) followed by epiphora with other discharge (20%). Our study correlated well with studies by Jouko Hutikainen. (76%)<sup>2</sup> and P. Shiva Reddy(80%).<sup>7</sup> Redness and stickiness of lids constituted 10% of cases in our study and more incidence was seen in Prof. P. Shiva Reddy studies<sup>7</sup> (75%). Chronic dacryocystitis without associated mucocoele or lacrimal abscess was the most frequently encountered clinical type (76.7%) in our study similar to Sood. N.N<sup>8</sup> statistics (66%). The next common presentation was acute dacryocystitis (13.3%). Congenital dacryocystitis was 10% in our study.

18.3% of cases had nasal pathology which is comparable to Rajeev N. Bhale<sup>9</sup> study showing (29%). Hypertrophied turbinate was observed in 11.7% of total cases followed by DNS 6.7%. In this study *Staphylococcus aureus* was the most common microorganism over all (40%) and it was isolated in 39% of chronic dacryocystitis cases, 37% of acute dacryocystitis cases and 50% of congenital dacryocystitis cases. Coden et al study also reported staphylococcus species as the commonest organism cultured. This was followed by staphylococcus epidermidis

(23.3%) and all were isolated from chronic dacryocystitis cases. *Pseudomonas aeruginosa* constituted 10% over all but constituted 50% of acute dacryocystitis cases. 13.3% cases were sterile. This can be compared to Jouko Hartikainen<sup>2</sup> (15.7%), Umesh Bareja<sup>11</sup> (82.5%) studies. No fungal isolates were seen.

The antimicrobial sensitivity pattern varies from community to community because of the emergence of resistant strains as a result of indiscriminate use of antibiotics.

The Gram-positive isolates were most sensitive to vancomycin (100%), followed by tobramycin, linezolid and ofloxacin (94.73%). Gram-positive organisms were least sensitive to ciprofloxacin (76.31%) and penicillin (10.52%).

The Gram-negative organism *P. aeruginosa* was most sensitive to tobramycin, imipenem, gentamicin (100%) followed by cefepime (83.3%) and least sensitive to ciprofloxacin (50%). In a study by Kuchar A et al<sup>12</sup> of congenital dacryocystitis, ofloxacin and tetracycline turned out to be most effective (84.9%) to all Gram-positive and Gram-negative isolates. These were followed by chloramphenicol (83.6%), bacitracin, ciprofloxacin (61.6%), and norfloxacin (60.3%).

Ghose S et al<sup>13</sup> showed that tobramycin (100%) was the most effective single antibiotic against all organisms, followed by gentamicin (97%) and vancomycin (97%). In Usha K et al<sup>14</sup> study, Gram-positive organisms exhibited a higher rate of sensitivity to chloramphenicol, vancomycin, and ofloxacin. Non granulomatous inflammation consistent with dacryocystitis in the most common diagnosis in our study (85.7%) which correlated well with Anderson NG<sup>15</sup> study (85.1%) and Maureillo JA Jr study (89%).<sup>16</sup>

## Conclusion

The study of dacryocystitis is an interesting subject in clinical ophthalmology, because it being the common clinical entity encountered in routine ophthalmic practice and also an important cause of ocular morbidity in India. Therefore this subject needs an extensive research to solve the enigma for the etiology of dacryocystitis. Availability of a wide range of successful treatment modalities for all the clinical form of the disease is the most satisfying fact. DCR done for chronic dacryocystitis has a very high success rate. Though this disease exists in varied form etiologically, the patients can be relieved of an unpleasant epiphora. Prompt surgical treatment helps in prevention and management of complications of dacryocystitis.

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