

## A CLINICAL AND BACTERIOLOGICAL STUDY OF CHRONIC DACRYOCYSTITIS

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### ABSTRACT

#### BACKGROUND

Chronic dacryocystitis is a very common clinical condition encountered in day-to-day ophthalmic practice. Chronic dacryocystitis and its various complications are known to every ophthalmologist. The word dacryocystitis as such suggests inflammation of lacrimal sac and its duct.

The aim of the present study is to study the bacteriological and microbiological pattern of dacryocystitis.

#### MATERIALS AND METHODS

We have conducted a prospective case study in patients attending the Outpatient Department of Ophthalmology in Government General Hospital, Kakinada, during the period of 2014 to 2016. The study was done in 50 patients to evaluate clinical and bacteriological pattern of chronic dacryocystitis.

#### RESULTS

Out of 50 cases of dacryocystitis studied bacteriological report shows 56% cases report is sterile, 4% cases coagulase positive, 6% cases coagulase negative, 4% cases positive for diplococcus pneumonia, 8% cases showed positive for streptococcus viridians, 8% cases showed positive for Klebsiella, 4% for pseudomonas and 2% for mixed results.

#### CONCLUSION

Incidence of the bacterial infection of the lacrimal passage as revealed in the present studies quiet high.

#### KEYWORDS

Acute Dacryocystitis, Chronic Dacryocystitis, Lacrimal Sac.

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#### BACKGROUND

In Ophthalmology, dacryocystitis is one of the most common diseases. It indicates itself through the inflammation of the lacrimal sac and the nasolacrimal duct causing social handicap to the patient and also presenting troublesome and noticeable symptoms.

It is an important cause of ocular morbidity in India. Both eyes maybe affected. The disease occurs as an isolated incident (acute) or ongoing (chronic) form. Chronic dacryocystitis is commonly encountered by an ophthalmologist accounting for 87.1%. It commonly affects females<sup>1</sup> over 40 years of age with peak incidence in 60 to 70 years. It has higher incidence among people of lower socioeconomic status.

Bacterial chronic dacryocystitis is the most common,<sup>1,2</sup> though other organisms may cause chronic dacryocystitis. Whenever there is low-grade infection due to bacteria, it is suddenly changed to an acute from. It is described clinically

as an acute dacryocystitis. This sudden turning of clinical picture is due to various reasons. Usually, aetiopathological processes is a cyclic event that is blockage in the lacrimal passage.

#### Aims and Objectives-

A clinicobacteriological study of chronic dacryocystitis-

1. To find out various types of bacteria associated with chronic dacryocystitis.
2. Correlation of clinical features associated with different organisms involved in the disease.
3. Association of dacryocystitis with respect to occupation and social status of the patient.
4. Association of dacryocystitis with other associated eye conditions and rhinological conditions.
5. Age and sex incidence of dacryocystitis patients.
6. To study the bacteriological and microbiological pattern of dacryocystitis.

Study Design- Observational study.

Study Period- From December 2014 to August 2016 as mentioned in study protocol.

Study Setting- Government General Hospital, Kakinada.

Sample Size- 50.

Study Subjects- Patients of all ages and both sex belonging to different socioeconomic statuses attending Department of Ophthalmology, GGH, Kakinada, fulfilling the following inclusion criteria were included.

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**Inclusion Criteria-**

1. Watery or mucopurulent discharges for more than 3 months or swelling over the sac area.
2. Preoperative investigations for cataract surgery revealing chronic dacryocystitis.

**Exclusion Criteria-** Nasolacrimal duct blockage due to tumours and drugs. The direct smear examination was done by staining with Gram’s stain, Ziehl-Neelsen stain and also Giemsa stain hours. The organisms were subjected to biochemical reactions for further identification. Thus, the organism isolated was identified on the basis of morphology and biochemical tests and assigned to the respective group.

**RESULTS**

50 cases of dacryocystitis studied have been analysed as follows-

**1. Age Incidence-**

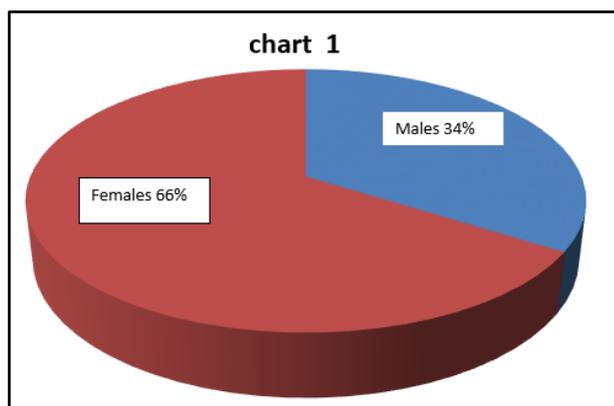
Sl. No.	Age Group in Years	No. of Cases	%
1.	1-9	2	4
2.	10-19	3	6
3.	20-29	7	14
4.	30-39	6	12
5.	40-49	12	24
6.	50-59	8	16
7.	60-69	9	18
8.	Over 70	3	6

**Table 1. Showing Age Incidence of Dacryocystitis**

Dacryocystitis appears to be commonest in the age group 40-49 years.

Dacryocystitis is more common in the females. In the present series, incidence of dacryocystitis is 66% in females and 34% in males, the sex ratio of female, male being about 2:1. The higher incidence in females maybe attributed to the narrower lumen of the body lacrimal canal.

**2. Sex Incidence-**



**Chart 1. Showing Sex Incidence of Dacryocystitis**

**3. Sex Incidence in Different Age Groups-**

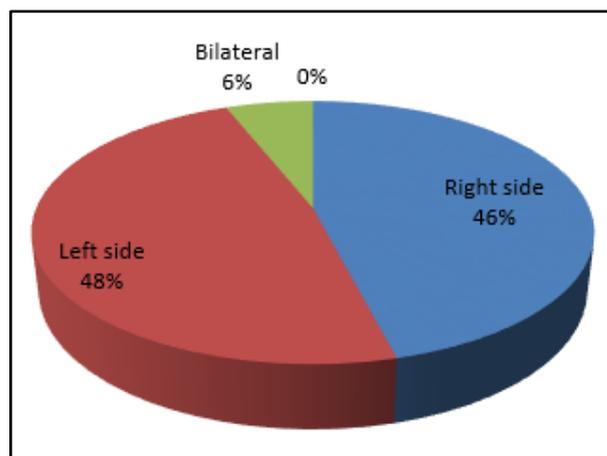
Sl. No.	Age Group in Years	Females		Males		F:M Ratio
		No. of Cases	%	No. of Cases	%	
1.	1-9	1	2	1	2	1:1
2.	10-19	2	4	1	2	2:1
3.	20-29	3	6	3	6	1:1
4.	30-39	6	12	1	2	6:1
5.	40-49	9	18	3	6	3:1
6.	50-59	5	10	2	4	2.5:1
7.	60-69	6	12	4	8	3:2
8.	Over 70	2	4	1	2	2:1
<b>Total</b>		<b>34</b>	<b>68</b>	<b>16</b>	<b>32</b>	<b>2:1</b>

**Table 2. Showing Female-Male Ratio in Different Age Groups**

The relative sex incidence in various age groups shows a female preponderance except in the age group 10-19 and 20-29 years where males show a higher incidence.

**4. Side Affected-**

In the present series, 23 cases had dacryocystitis on right side and 24 patients (cases) on left side and 9 cases were bilateral. So, this disease has no special predilection to the side, though left side shows a slightly higher incidence (46%) when compared to the right side (48%).

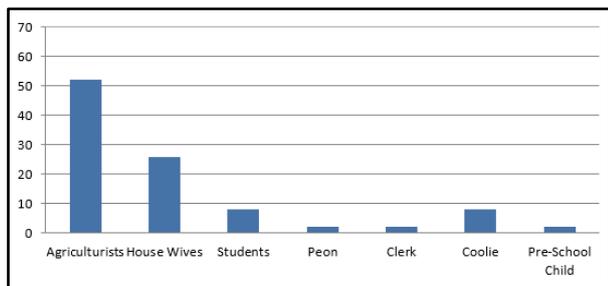


**Chart 2. Showing Side Affected**

**5. Occupation and Social Status-**

Almost, all the cases in this series are persons placed in poor socioeconomic conditions. In most of the cases, lack of personal cleanliness was observed. How far this can be attributed as a predisposing factor for dacryocystitis is difficult to say as well placed and civilised persons were also not immune to this disease. One case with a history of similar occurrence in the family was noted and so it is difficult to conclude whether familial tendency is a predisposing factor.

Thus, it shows that dacryocystitis occur amongst agriculturists forming 52%, whereas 26% in housewives, clerks, peon and preschool child 2% each and coolies and students 8% each.



**Chart 3. Showing Occupation of the Patients**

6. Clinical Types of Dacryocystitis-

Sl. No.	Clinical Type	No. of Cases	%
1.	Chronic dacryocystitis	45	90
2.	Lacrimal abscess	1	2
3.	Lacrimal fistula	3	6
4.	Mucocele	1	2

**Table 3. Shows Clinical Types of Dacryocystitis**

Chronic dacryocystitis is by far the commonest clinical type encountered in the present series incidence being as high as 90%, 6% of cases had developed a fistula. 2% cases presented in the form of mucocele. Only 2% cases presented

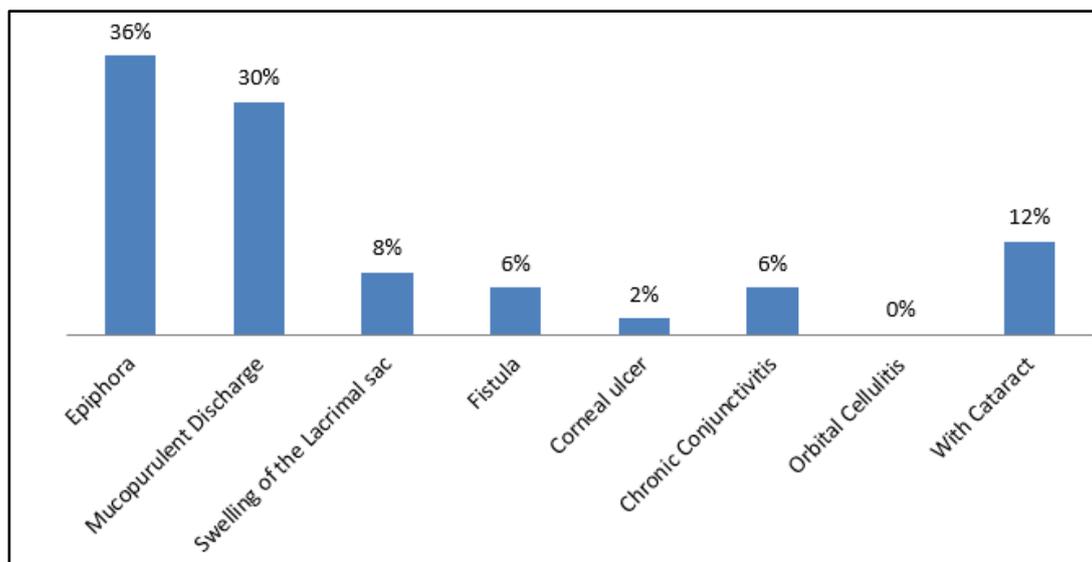
with acute exacerbation of chronic dacryocystitis as lacrimal abscess.

7. Presenting Features-

Sl. No.	Clinical Features	No. of Cases	%
1.	Epiphora	18	36
2.	Mucopurulent discharge	15	30
3.	Swelling of the lacrimal sac	4	8
4.	Fistula	3	6
5.	Corneal ulcer	1	2
6.	Chronic conjunctivitis	3	6
7.	Orbital cellulitis	0	0
8.	With cataract	6	12

**Table 4. Showing Chief Clinical Features**

Persistent watering is the commonest presenting feature of dacryocystitis (32%). Regurgitation of mucopurulent material from the lacrimal sac is also a fairly common feature in these cases (30%). Chronic conjunctivitis was seen in about 7% of cases. 5% of cases had swelling of the lacrimal sac, 7% cases have lacrimal fistula, 5% of cases presented as corneal ulcer and 14% of cases with cataract. In these cases, dacryocystitis was diagnosed on routine investigation. Thing did not have any other feature of dacryocystitis.



**Chart 4. Showing Clinical Features of Dacryocystitis**

8. Associated Rhinological Condition-

36% of cases had definite rhinological lesion, which could be attributed as a causative factor for dacryocystitis. Deviated nasal septum is by far the commonest rhinological cause accounting for 20% of cases of dacryocystitis.

Atrophic rhinitis and allergic rhinitis accounts for 2% and 4%, respectively. The cases of maxillary sinusitis were

confirmed by radiological studies. Three cases had hypertrophic turbinates, which amounts to 6% of cases and allergic rhinitis accounts for 4% only.

9. Associated Eye Conditions-

The cases of dacryocystitis studied has the following ocular conditions.

Sl. No.	Associated Ocular Conditions	No. of Cases	Percentage
1.	Chronic conjunctivitis	3	6
2.	Corneal ulcer	1	2
3.	Orbital cellulitis	0	0
4.	Cataract	6	12

**Table 5. Showing Associated Eye Conditions**

Of them, chronic conjunctivitis, corneal ulcer and orbital cellulitis are sequelae of dacryocystitis. Cataract is only a coexisting condition.

10. Associated Systemic Condition-

Out of 50 cases studied, one case had diabetes mellitus and hypertension confirmed by blood sugar studies.

11. Morbidity-

One case had decreased vision accounting to corneal scarring as a sequel of corneal ulcer. Morbidity rate of dacryocystitis amounts to 2%.

12. Bacteriological Studies-

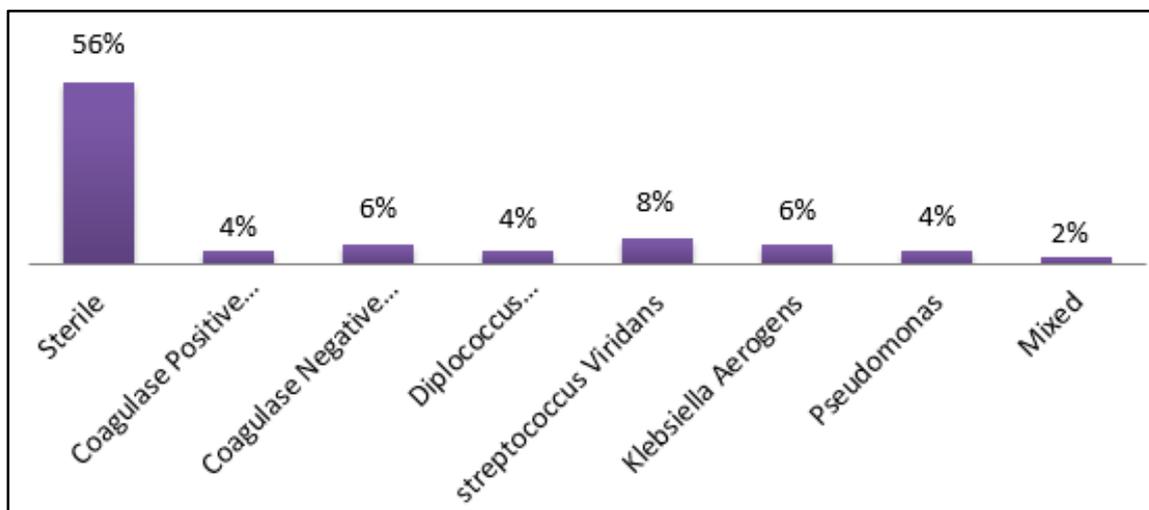


Chart 5. Showing Bacteriological Pattern

13. Mycological Studies-

Out of 50 cases studied, 5 cases showed a positive fungal growth.

Sl. No.	Fungus Isolated	No. of Cases	%
1.	Sterile	28	56
2.	Candida albicans	2	4
3.	Aspergillus	3	6

Table 6. Showing the Mycological Pattern

Candida albicans and Aspergillus are the common fungal organisms causing dacryocystitis. Candida albicans accounting to 4% of the cases studied and nearly 10% of fungal positive cases. Aspergillus accounting to 6% of cases studied. Fairly high incidence of bacterial infection of lacrimal sac in the present series is perhaps attributable to the over-the-counter use of antibiotics, corticosteroids in the urban population and use of native medicine and herbs in rural population.

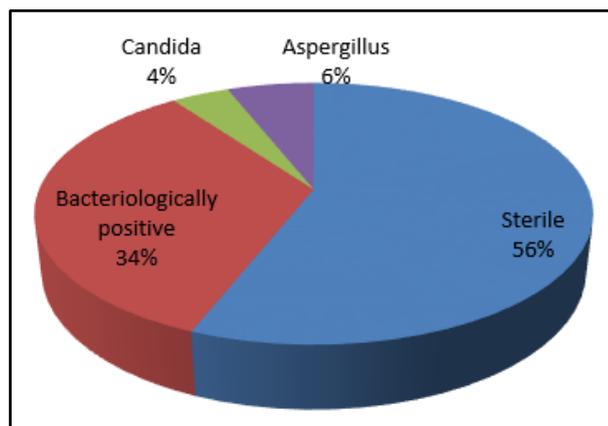


Chart 6. Showing Bacteriological Pattern

DISCUSSION

Age Factor- The highest incidence was noticed in 5<sup>th</sup> decade. In the present study, dacryocystitis appears to be commonest in the age group 40-49 years amounting to 24% (nearly one quarter of all cases studied). Next age group is 60-69 years accounting for 18% of cases studied. It is least common in the age group 1-9 years (incidence being just 4%). Incidence is low in the younger age group. 1-9 years accounts to 4% and 10-19 years just 6%. Incidence above 70 years accounts to 6% of cases. Thus, it is evident that dacryocystitis is a disease of adults especially in middle age. In the present series, the youngest patient was 2 years old and the oldest patient was 72 years old.

Laterality in the present series, left side<sup>3</sup> involvement showed a very slight higher incidence (46%) and the right side (45%). 9% of cases has bilateral involvement side.

Dacryocystitis is more common in the females.<sup>4</sup> In the present series, incidence of dacryocystitis is 66% in females and 34% in males. The sex ratio of female:male being about 2:1. The higher incidence in females maybe attributed to the narrower lumen of the body lacrimal canal. In the present series, 23 cases had dacryocystitis on right side and 24 patients (cases) on left side and 9 cases were bilateral. So, this disease has no special predilection to the side, though left side.

Almost, all the cases in this series are persons placed in poor socioeconomic conditions. In most of the cases, lack of personal cleanliness was observed. How far this can be attributed as a predisposing factor for dacryocystitis is difficult to say as well placed and civilised persons were also not immune to this disease. One case with a history of similar occurrence in the family was noted and so it is difficult to conclude whether familial tendency is a predisposing factor.

Thus, it shows that dacryocystitis occur amongst agriculturists forming 52%, whereas 26% in housewives, clerks, peon and preschool child 2% each and coolies and students 8% each.

Persistent watering is the commonest presenting feature of dacryocystitis (32%). Regurgitation of mucopurulent material from the lacrimal sac is also a fairly common feature in these cases (30%). Chronic conjunctivitis was seen in about 7% of cases, 5% of cases had swelling of the lacrimal sac, 7% cases have a lacrimal fistula, 5% of cases presented as corneal ulcer and 14% of cases with cataract. In these cases, dacryocystitis was diagnosed on routine investigation. 36% of cases had definite rhinological lesion, which could be attributed as a causative factor for dacryocystitis. Deviated nasal septum is by far the commonest rhinological cause accounting for 20% of cases of dacryocystitis.

Atrophic rhinitis and allergic rhinitis accounts for 2% and 4%, respectively. The cases of maxillary sinusitis were confirmed by radiological studies. Three cases had hypertrophic turbinates, which amounts to 6% of cases and allergic rhinitis accounts for 4% only. Amongst the clinical types of dacryocystitis, chronic dacryocystitis from the commonest variety<sup>5</sup> (6%) of cases have lacrimal fistula, 2% forms a definite mucocele, acute dacryocystitis is comparatively of a low.

Bacteriological studies yielded a bacteriologically positive in 17 cases (34%) and 56% were bacteriologically sterile. Staphylococcus, pneumococcus and streptococcus viridians were organism commonly found.<sup>6</sup> Klebsiella aerogenes were isolated in 3 cases rather uncommon organism so far reported.

Incidence of bacterial infection of the lacrimal passage as revealed in the present studies is quite high,<sup>7,8</sup> probably due to indiscriminate use of antibiotics and steroids. Review of literature reveals that nearly 80% of the cases of dacryocystitis are due to bacterial infection<sup>9</sup> and is silent about the mycotic infection of chronic dacryocystitis from the aetiological point of view, most commonly, positive cases are due to bacteria.<sup>10</sup>

Presenting Features- Epiphora was the commonest features in the present series, it is as high as 36%. Mucopurulent discharge has an incidence of 30% in the present series, which is high.

In 22% of cases, in the present series, dacryocystitis was discovered incidentally (14% with cataract, 2% with corneal ulcer and non with panophthalmitis).

#### Mycological Pattern-

In the present series, 10% of dacryocystitis were mycotic in origin (4% due to candida albicans and 6% due to Aspergillus).

#### CONCLUSION

Dacryocystitis is a fairly common disease encountered in ophthalmic practice. 50 cases of dacryocystitis were studied at the Department of Ophthalmology, Government General Hospital, Kakinada, from a clinicobacteriological point of view. Clinical, bacteriological, mycological and

histopathological studies revealed the following pattern regarding the incidence and cause of dacryocystitis.

Dacryocystitis is commonest in the age group 40-49 years though it can occur in any age (2 years to 80 years). It is a disease of the adults especially in the middle age.

Dacryocystitis is more common in the females. The ratio being 2:1 (except in the age 10-19 and 20-29 years, which shows a higher incidence in the males). Dacryocystitis can affect both sides though it appears to be more common on the left side (48%) than on the right side (46%). Bilateral cases were 6%. Dacryocystitis is common amongst poorer class of people, majority of patients studied were either agriculturists or housewives.

Incidence in the present series- One case of lacrimal abscess was encountered. Definite familial tendency has not been seen except in one case. Amongst the clinical types of dacryocystitis, chronic dacryocystitis from the commonest variety (6%) of cases have lacrimal fistula, 2% forms a definite mucocele and acute dacryocystitis is comparatively of a low.

Epiphora is by far the commonest presenting symptom. Mucopurulent discharge, chronic conjunctivitis, swelling of the lacrimal sac are other symptoms. Often dacryocystitis is discovered as an incidental finding in cases of corneal ulcers and cataract.

Contributory rhinological conditions, attributable as aetiological factors in causation of dacryocystitis were found in 36% of cases (deviated nasal septum (20%), atrophic rhinitis 2% and maxillary sinusitis 4%). Hypertrophic rhinitis was found in 3 cases. Allergic rhinitis was found in 2 cases. Three cases had diabetes mellitus. Morbidity of dacryocystitis is quite considerable (2%). Bacteriological studies yielded a bacteriologically positive in 17 cases (34%) and 56% were bacteriologically sterile. Staphylococcus, pneumococcus and streptococcus viridians were organism commonly found. Klebsiella aerogenes were isolated in 3 cases rather uncommon organism so far reported. 5 cases (10%) showed a positive mycological agent as an aetiological factor. Candida albicans and Aspergillus were the fungi isolated in 2 cases and 3 cases each, respectively. From any aetiological point of view, 27 cases were definitely established to be of infective origin (bacterial and fungal), and in the remaining 23 cases, no definite aetiological factor could be established. Histopathological studies do not give a definite clue as regards the aetiology.

In conclusion, it can be said that dacryocystitis analysed after clinical, bacteriological, mycological and pathological studies has thrown an interesting light and view point regarding its incidence and causes. Incidence of bacterial infection of the lacrimal passage as revealed in the present studies is quite high probably due to indiscriminate use of antibiotics and steroids. Review of literature reveals that nearly 80% of the cases of dacryocystitis are due to bacterial infection and is silent about the mycotic infection of chronic dacryocystitis. Our take off for a full understanding of this infection must be protected from the extensive and elaborate base of bacterial infection.

In spite of such extensive clinical and investigative procedures, a fairly high percentage of cases remain unsolved mysteries. From the aetiological point of view, most commonly positive cases are due to bacteria.

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