

A Five-Year Retrospective Review of the Clinical Spectrum and Management Pattern of Dacryocystitis in a Tertiary Care Hospital of Coastal Karnataka

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ABSTRACT

BACKGROUND

Dacryocystitis is the most common pathology affecting lacrimal drainage system, representing 79 - 87 % of all lesions. This retrospective study was conducted to understand the clinical spectrum and management patterns of dacryocystitis in the past 5 years in a tertiary care hospital of coastal Karnataka.

METHODS

This is a five-year retrospective review of the case records of patients with dacryocystitis from the year 2015 to 2019. The records were retrieved from the electronic medical record system of the hospital using the International Statistical Classification (ICD) 10 codes. Data retrieved included, demographic profile, clinical history, presenting symptoms, past surgical interventions, examination findings, systemic comorbidities, pattern of management, medical or surgical management and complications if any. 45 cases that had completed medical records were included in the study.

RESULTS

The mean age of presentation was 49.37 (\pm 19.59). The condition was more common in females with a male to female ratio of 1:2.5. The condition was almost equal on both sides. 11 (24.44 %) had bilateral involvement. The patients were mostly from coastal areas or dry plains. Most common presentation was chronic dacryocystitis. Aggravated epiphora was the most common symptom (33) 73.3 %. Diabetes mellitus (15) and hypertension (10) were the most common systemic comorbidities. (22) 48.8 % had no comorbidities. The complications seen were (4) 8.9 % fistula, (1) 2.2 % lacrimal abscess, (2) 4.4 % conjunctivitis and (1) 2.2 % preseptal cellulitis. The patients who underwent nasal examination were (31) 68.9 % out of which, 26 had no abnormal finding in the nose. Surgical treatment was performed in 29 (64.4 %) mainly in the form of dacryocystectomy (DCT) 24 (53.3 %) while only 5 (11.1 %) underwent conventional dacryocystorhinostomy (DCR).

CONCLUSIONS

Chronic dacryocystitis is the most common form of presentation with higher incidence in the females in the fifth decade of life. Epiphora was the commonest symptom. Most patients who underwent a preoperative nasal examination did not have any pathology. DCT was the more commonly performed procedure.

KEYWORDS

Acute Dacryocystitis, Chronic Dacryocystitis, Dacryocystectomy, Dacryocystorhinostomy, Epiphora

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BACKGROUND

Dacryocystitis is the inflammation of the lacrimal sac. It can have an acute or chronic presentation. Chronic form of the disease is associated with nasolacrimal duct obstruction. The obstruction of the duct may be due to various causes like inflammation, trauma, injury, neoplasms or secondary to infection. The idiopathic form of the disease can also be a presentation. The obstruction of the duct may result in the accumulation of tears or mucoid secretions and thereby secondary bacterial infection can occur resulting in inflammation of the sac and dacryocystitis.¹

Acute dacryocystitis presents usually as abscess of lacrimal sac, preseptal abscess or orbital cellulitis. Acute dacryocystitis is a painful condition which resolves slowly even if systemic antibiotics are used for treatment.

Chronic dacryocystitis was found to be more common in females above 30 years of age.¹ The diagnosis of the condition is made when there is aggravated epiphora along with mucoid or mucopurulent regurgitation on regurgitation test or lacrimal sac syringing.

Amongst the pathologies affecting the lacrimal sac, dacryocystitis is the most common (79 %).² The other pathologies affecting the drainage system includes dacryolithiasis (7.9 %), tumour (4.5 %), congenital malformation (1.4 %), canaliculitis (1.2 %) and granulomatous inflammation (1.2 %).²

In adults the major cause for dacryocystitis is stenosis of lacrimal duct.³ Microorganisms isolated from acute and chronic form of the disease differs. In acute form gram negative rods predominate. But multiple organisms were isolated from majority of patients. The organisms isolated include bacteria, viruses and fungi. Bacterial dacryocystitis contributes to around 60.8 % to 94.9 %.⁴ *Staphylococcus* (*S. aureus*, *S. epidermidis* and *S. saprophyticus*) was the most frequently isolated organism (50 %). Gram negative rods were also found associated with the condition (25.5 %). Other organisms that can be seen include *Escherichia coli*. Fungi causing dacryocystitis includes fusarium, aspergillus, and *Candida albicans*. The identification of these organisms is done by adequate microbiological examination for the optimal antibiotic therapy. The choice of treatment depends upon the age of presentation, the stage of disease, the organism causing infection and the resistance of organism to the treatment. The magnitude, the resistance of organism to the antibiotic differs between the geographic region.⁵

3 % of cases in Ophthalmic practice¹ are diseases involving the lacrimal apparatus, and dacryocystitis (DC) is the most common pathology affecting the lacrimal drainage system, representing 79 – 87 % of all lesions.² Anatomical or physiologic obstruction in the nasolacrimal duct (NLD) leads to retention, stagnation of tears, distension of the sac and provides an environment conducive to the growth of microorganisms which spreads from conjunctiva or nasal mucosa. In the congenital form, it is due to the non-canalisation at the distal end of NLD. In acute dacryocystitis (ADC), there is an acute inflammation of the sac due to NLD obstruction with secondary bacterial infection.³ The clinical presentation may vary from erythema and tenderness^{5,6} to more serious presentations like orbital cellulitis with orbital

abscess, cavernous sinus thrombosis, meningitis and total vision loss.^{7,8} Chronic dacryocystitis (CDC) is largely managed by creating an anastomosis between the lacrimal sac mucosa and nasal mucosa in external dacryocystorhinostomy (DCR).⁹ The endonasal approach is cosmetically more acceptable which can be done in acute conditions. This also allows the correction of nasal pathology simultaneously.¹⁰

The demographic profile of patients varied according to different regions and populations. The median age of presentation of acute adult dacryocystitis in an Indian study was 37 years,³ in Romania it was beyond the seventh decade¹¹ while in Nepal the affected population was much younger (in their third to fifth decade of life).¹² The disease was more common amongst females, where the ratio of females to males could vary from 2:1 to 8:1 with some exceptions where it was shown to be almost equal. Bilateral involvement was seen in 8.4 %. Few studies found that the left side was more commonly involved than the right^{13,11} while some found that both sides were involved equally.³

According to an Indian study, acute dacryocystitis comprised of 2.4 % of all patients with lacrimal disease. The acute form was common in younger patients.³ The average age of presentation of acute dacryocystitis was 37 years. The complications of dacryocystitis included lacrimal abscess (23 %), fistula (5.6 %) and orbital cellulitis (2.8 %). Acute dacryocystitis frequently presented as pre-septal cellulitis because the lacrimal sac is located anterior to the orbital septum. The anatomical barrier of the orbit prevents the occurrence of orbital cellulitis secondary to acute dacryocystitis. But if orbital cellulitis occurs it results in diminution of vision.⁷

Studies have shown that predisposing factors were present in 80 % of the patients with dacryocystitis. Nasal and paranasal inflammation were the commonest among them.¹³ Chronic systemic comorbidities were present in 81 % of patients, hypertension being the most frequent followed by diabetes mellitus. External DCR was the commonest surgical treatment with up to 80 % patients undergoing the procedure with stent placement in an Indian study.¹

Feng et al. in their study showed that the outcome of external DCR was the same with or without stent placement.⁴ Many studies have reported similar success rates in external and endonasal DCR.^{14,15,16,17}

In a study done by R Karim et al., average age of presentation of dacryocystitis was 69 years. 62.4 % female preponderance was noticed.⁹

According to the study done by Bale RN et al. dacryocystitis was found over 30 years of age in approximately 78 %. The peak age of presentation was 51 to 60 years (26 %). The incidence of dacryocystitis according to the various authors in different studies conducted were 83 % (Traquair), 73 % (summer skill), 63.3 % (Sood et al.) and 57 % (Bale et al.). Sood et al. found that there was no difference in incidence of laterality (50 % both sides). Veris found that left side was affected more than the right side (66 %).

In a study done by Groesel et al. they found that females had a small bone diameter at the lower part of lacrimal fossa

and the middle part of nasolacrimal duct compared to males. With aging, there occurs osteoporotic change which coincides with the enlargement of bony nasolacrimal fossa. This explains the increasing prevalence of nasolacrimal duct observation in females.¹⁸

In another study done by Lijuan et al. dacryocystitis is commonly seen in two age groups, infants and adults more than 40 years of age. Initial treatment of the case is usually with local application of warmth and oral antimicrobial agents. Sometimes abscess incision and drainage is done and in cases of chronic dacryocystitis, dacryocystorhinostomy or dacryocystectomy is considered. Initial treatment is usually with broad spectrum antibiotics. Currently, second or third generation cephalosporins are used for empirical treatment of chronic dacryocystitis. Epidemiological studies are very important for the evidence-based treatment of dacryocystitis. Otherwise, it might result in bacterial resistance to antibiotics. Studies have shown that resistant bacterial strains differ in different geographical distribution. The clinical presentation of dacryocystitis were found to differ according to the geographic location on a few studies.⁴ This retrospective study was conducted to understand the clinical spectrum, management patterns of dacryocystitis in the past 5 years in a tertiary care hospital of coastal Karnataka and to document the clinical presentation & complications of dacryocystitis.

METHODS

A five-year retrospective review of the case records of patients with dacryocystitis from the year 2015 to 2019 was done after obtaining clearance from the institutional ethics committee. The records were retrieved from the electronic medical record system of the hospital using the ICD 10 codes.

Data retrieved included, demographic profile, clinical history, presenting symptoms, past surgical interventions, examination findings, systemic comorbidities, pattern of management medical or surgical management and complications if any. Patients of all age groups and both sexes were included.

ADC was diagnosed based on symptoms and signs of acute lacrimal sac inflammation with or without history of past epiphora. CDC was diagnosed based on absence of acute symptoms and presence of epiphora, with or without discharge, lacrimal sac swelling and blocked NLD on syringing. Only cases that had completed medical records were included in the study.

Statistical Analysis

The data obtained was entered and subsequently analysed using Statistical Package for the Social Sciences (SPSS) (version 16) statistical software program. Multivariate regression analysis was done and a P-value < 0.05 was considered statistically significant.

RESULTS

This study included 45 participants with complete medical records were included. The mean age of presentation was 49.37 (\pm 19.59). The condition was more common in females with a male to female ratio of 1:2.5. The condition was almost equal on both sides (Figure 1). 11 (24.44 %) had bilateral involvement. There was no significant difference in laterality with gender (P = 0.089). The patients were mostly from coastal areas or dry plains. 41 (91.11 %) were symptomatic. Most common presentation was CDC (33) 73.3 %, while ADC, CNLDO and acute on chronic dacryocystitis were 6.6 % each (Table 1). There was no significant difference in the symptoms with which the patients presented and their geographical distribution (P = 0.117). Aggravated epiphora was the most common symptom (33) 73.3 % and discharge and swelling were present in 6.6 % each. Diabetes mellitus (15) and hypertension¹⁹ were the most common systemic comorbidities. (22) 48.8 % had no comorbidities. The complications seen were (4) 8.9 % fistula, (1) 2.2 % lacrimal abscess, (2) 4.4 % conjunctivitis and (1) 2.2 % preseptal cellulitis. The complications were found to be almost similar in both sexes (P = 0.054).

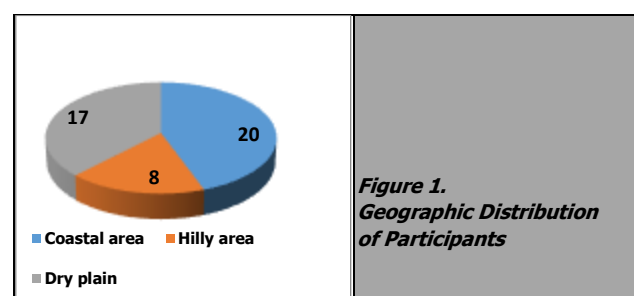


Figure 1.
Geographic Distribution
of Participants

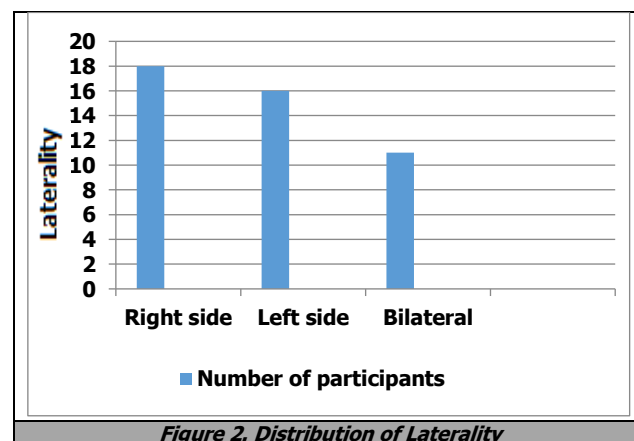


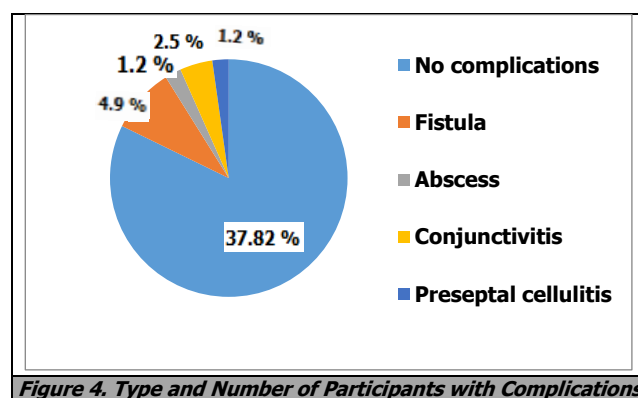
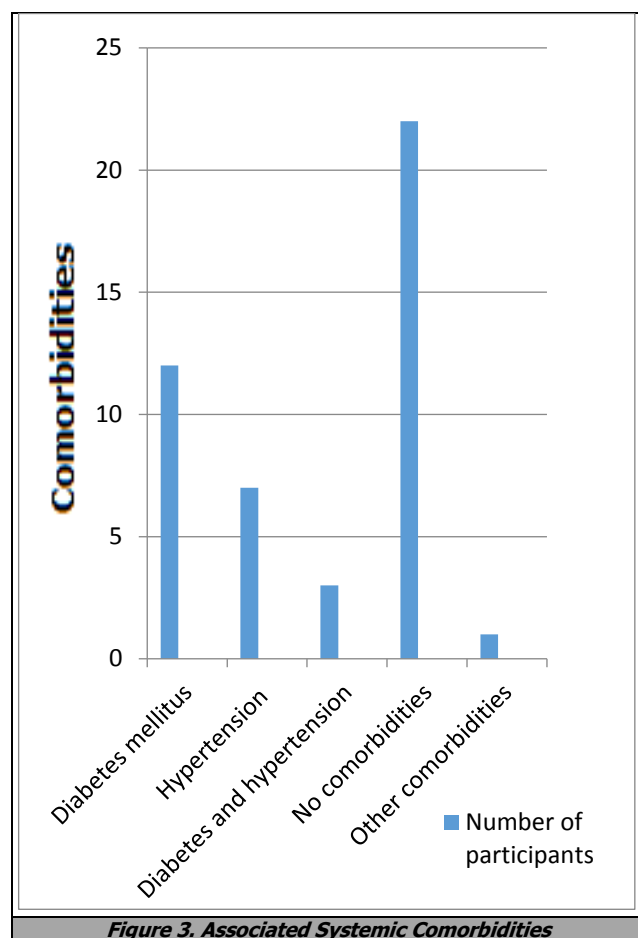
Figure 2. Distribution of Laterality

The patients who underwent nasal examination were (31) 68.9 %, out of which, 26 had no abnormal finding in the nose. The nasal pathologies on screening were DNS to the same side were (3) 6.7 % and hypertrophic turbinate (2) 4.4 %. Most patients were treated surgically. Medical management in the form of topical or oral antibiotics with or without ocular massage was prescribed to (16) 35.6 % mostly as a temporary measure.

Surgical treatment was performed in 29 (64.4 %) mainly in the form of DCT 24 (53.3 %) while only 5 (11.1 %) underwent conventional DCR. None of the children who were advised for probing came back for the procedure.

Diagnosis	Number of Participants
Congenital	3
Acute	3
Acute on chronic	3
Recurrent	3
Chronic	33

Table 1. Type of Clinical Presentation



DISCUSSION

The participants of the study were mainly residing in coastal area (44.4 %) followed by dry plains (37.8 %). The geography of the region is important as the occurrence of

dacryocystitis, and its severity can depend on it.¹⁹ Most participants (91.11 %) were symptomatic and underwent treatment for it. Those who had an incidental diagnosis of the condition were few. The accessibility to medical care in the region may be responsible for the early treatment seeking behaviour.

The chronic form of the disease was most common. The age of presentation was mostly in the fifth decade similar to other studies.¹² In an Indian study on only ADC, the mean age of presentation was 37 yrs.³ In another study done by Sudipa et al. the average age of presentation was 39.04 ± 14.22 years.¹

The gender predisposition towards females was similar to that suggested in literature with variation in the proportions from 2:1 to 8:1 with some exceptions where it was shown to be almost equal.³ This was due to the narrower dimensions in the lower nasolacrimal fossa and the middle NLD in women, as well as the acute angle between the bony canal and the nasal floor that predisposes to chronic inflammation of the nasolacrimal drainage system.^{18,20}

The laterality of the condition is known to vary. In our study both sides were almost equally involved in this study similar to the study done by Ali.³ The lack of significant difference in size anatomically between the right and left side at any level explains the equal tendency of involvement.¹⁸ Few studies have however shown greater involvement of the left side than the right.^{13,11} Higher incidence of bilateral involvement in the present study 11 (24.44 %) compared to that by Ali 8.4 % could be due to structural variations in the skeletal structure of coastal population.³

Most common presentation was chronic dacryocystitis (33) 73.3 %. ADC was not so common similar to a Chinese study.⁴ In an Indian study ADC comprised of 2.4 % of all patients with lacrimal disease.³ Epiphora was the commonest symptom (33) 73.3 %. Discharge and swelling were less common. In a study by Mariana N, the major complaint for all patients was tearing and 17.6 % patients had an additional complaint of discharge.¹⁴

Most of the patients in this study (82.2 %) did not present with complications. Fistula was the commonest complication (4) 8.9 % besides lacrimal abscess and preseptal cellulitis. The complication rate was higher in an Indian study and included conjunctivitis, corneal ulcer, acute on chronic dacryocystitis, lacrimal abscess and fistula.¹⁵ Nasal examination was performed in 68.9 % of the cases and 16 % (5) had nasal pathology in the form of deviated nasal septum (DNS) to the same side or hypertrophic turbinate. This was much lower than the study done by Bhale R, where 41 (28.6 %) cases had DNS and inferior turbinate hypertrophy.¹⁶ In another study, hypertrophied inferior turbinate, deviated nasal septum, nasal polyp and allergic rhinitis were found in 19.6 % of the patients.¹⁵

The systemic comorbidities were less commonly seen in our study (48.8 %) as compared to another study where 81 % had associated systemic comorbidities and hypertension was the commonest followed by diabetes mellitus.¹¹ Hypertension was also the most common comorbidity in the study by Rabina (49 %) while it was diabetes mellitus (DM)

(15) % in our study.¹⁷ There was no significant association between hypertension, diabetes and the occurrence of dacryocystitis.

External DCR is the standard surgical treatment with up to 80 % patients undergoing the procedure with stent placement in an Indian study for the management of chronic dacryocystitis.^{21,22} In this study however, it was found that DCT was more frequently performed compared to DCR. Some of the reasons for preferring DCT over DCR quoted in literature are frail and elderly patients unable to withstand the risk of general anesthesia and longer duration of surgery,²³ those with systemic hypertension or other comorbidities where nasal packing with vasoconstrictors could be detrimental as seen in studies done by Mariana N Meireles, Magda MH Viveiros, in those with small fibrotic sacs and pre-existing dry eyes.²³ DCT also prevents aspirational pneumonia due to the seeping of blood into lungs from nasal bleeding.²³ DCR in comparison to DCT involves additional cost due to general anaesthesia, additional surgical instruments and sometimes devices like stents.²³ The cost factor may be a less common reason for preferring DCT.

CONCLUSIONS

Dacryocystitis is more common in coastal areas. Mean age of presentation was 49.37 years. Females were affected more commonly than males. Majority of the participants presented for the condition and the most common presenting symptom was aggravated epiphora. Right sided dacryocystitis was more common than left. Majority of participants did not have any complications at presentation. Nasal examination when done was found to be normal in majority of participants. The most common comorbidity associated was found to be type 2 diabetes mellitus. Majority of the participants were managed surgically, and the most common surgery performed was DCT.

Limitations

The success rate of surgery was not included due to inadequate follow up data. The indications for surgery were not adequately described and hence the reason for higher rate of DCT could not be analysed in detail. The sample size of the study was small and hence a generalization of the results cannot be done.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.

Financial or other competing interests: None.

Disclosure forms provided by the authors are available with the full text of this article at jebmh.com.

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