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CHRONIC DACRYOCYSTITIS- EMERGING TRENDS IN BACTERIAL ISOLATES AND THEIR RELATION WITH NASAL AND CONJUNCTIVAL ISOLATES.

Medical Science

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ABSTRACT

Purpose to study the prevalence of chronic dacryocystitis in relation to age , sex with the most prevalent organisms and their antibiotic sensitivity along with the correlation, if any, between nasal, conjunctival and lacrimal isolates ranged from 14-65 years. Cross sectional study of 100 patients with chronic dacryocystitis were selected. ROPLAS and lacrimal syringing was done. Swabs from nasal,conjunctival, lacrimal fluid were taken and gram stain and culture sensitivity was done, data statistically analysed and we found that the most common age group with chronic dacryocystitis was 31-41 years. In lacrimal swab gram staining, gram positive organisms were more common with Staphylococcus aureus as the most common organism and sensitive to Tobramycin, Ceforoxime, Ceftriazone, Amoxycillin and Gatifloxacin. . The most prevalent organism isolated from the nasal and conjunctival culture was Staphylococcus aureus .While, no significant relation was found between nasal, conjunctival and lacrimal flora.

KEYWORDS

Dacryocystitis ,Epiphora, Lacrimal sac, Staphylococcus,

INTRODUCTION

Lacrimal gland is the epicentre of a broad spectrum of inflammatory and neoplastic diseases [1]. It consists of the puncta, superior and inferior canaliculi, lacrimal sac and nasolacrimal duct[2].

The normal mucosa of the lacrimal sac is resistant to infections and only unhealthy mucosae which reduce its resistance predisposes to infection, stasis of lacrimal fluid being an important factor[3].

Dacryocystitis as a disease entity is known since ancient times [4]. It can be defined as a series of clinical entities characterized by inflammation of the lacrimal sac, frequently caused by nasolacrimal duct obstruction[5,6,7,8,9] The obstruction may lead to stagnation of tears in a pathologically closed drainage system causing subsequent infection and inflammation of the retained stagnant contents within the sac[5,7,10]. The obstruction may be primary or secondary to an anatomical abnormality that may led to tear flow stasis[11]. The primary obstruction may be due to idiopathic inflammatory stenosis and the secondary obstruction secondary to trauma, infection, inflammation, neoplasm or mechanical obstructio[5,9].

Dacryocystitis may be congenital or acquired.[12] Acquired dacryocystitis assumes two main forms: Acute and Chronic[6,13] . Chronic dacryocystitis is the most common type [14].It is the chronic inflammatory condition of the lacrimal sac commonly associated with partial or total obstruction of the nasolacrimal duct ,[15].

Several bacteria have been implicated as causative agents of chronic dacryocystitis[16,17]. Usually reported causative organisms are Staphylococcus, Pneumococcus and Streptococcus[15].

However concern exists for changing trends in the microbiologic spectrum of dacryocystitis.. Although the inflammation is infectious in origin, there is paucity of literature regarding its bacterial pathology in adults[19].

MATERIALS AND METHODS

This cross sectional study was conducted at Dr.Mohan Lal Memorial Gandhi Eye Hospital, Aligarh.Permission for this study was obtained from the ethical committee of the hospital. Informed consent was taken from the patients in their own language in a prescribed bilingual format. 100 patients who fulfilled the inclusion criteria were selected from those attending out patient department presented with chronic dacryocystitis.

INCLUSION CRITERIA: Patients presenting in the hospital with chronic dacryocystitis irrespective of the age and sex.

EXCLUSION CRITERIA: Patients with the previous history of ocular trauma or surgery like dacryocystorhinostomy or history of antibiotic treatment within one week of examination, congenital dacryocystitis or systemic diseases like diabetes, tuberculosis, autoimmune disorders etc, local diseases like corneal ulcer or any other inflammatory disease of the eye like scleritis, uveitis. Patients with lacrimal fistula or mucocoele or patients not willing to take part in the study were excluded.

Technique

100 patients with chronic dacryocystitis were selected. Patients with the following complains (for > 4 weeks) were considered as a case of chronic dacryocystitis:

- Chronic or recurrent epiphora
- Persistent redness of the medial canthus
- Painless recurrent swelling over the sac
- Discharge through the puncta

ROPLAS and lacrimal syringing was done to determine the site of obstruction and the nature of regurgitate One of the swab obtained from nasal, conjunctival and lacrimal site under complete aseptic condition was gram stained and examined under the microscope. The other swab was inoculated in the culture media under controlled temperature of 37º C for 24-48 hours. These were examined daily and discarded after 48 hours if no growth was seen. After identification of specific bacterial isolate, antimicrobial susceptibility testing was done by Kirby Bauer disc diffusion method on Muller Hinton agar according to Clinical and laboratory standards institute. The bacterial susceptibility test was performed against 11 antibiotics

RESULT

The overall age of the subject ranged from 14-65 years with the mean age of 41.47 years. The most common age group was found to be 31-40 years (40%).The prevalence of dacryocystitis was found to be more common in females (61%), as compared to males (39%).The disease was found to be more common in left eye (65%) as compared to right eye (35%). 100% patients presented with epiphora. ROPLAS was positive in 47% On syringing, mucopurulent discharge was present in 53%and discharge was purulent in 32% .In 15% cases clear fluid regurgitated. Lacrimal swab Gram stain was absent in 12% whereas the stain was gram positive in 71%and Gram negative in 17% cases. The culture were absent in 15% and present in 85% cases. Among all the lacrimal swab culture positive patients S. aureus(34.9%) was the most common isolate followed by Strep. epidermidis (18.8%), Strep

pneumonia(16%), H.influenzae(9.4%) . (Table 1)

Table 1 : Distribution of various organisms isolated from Lacrimal swab culture

Organisms isolated	Frequency	Percentage
S.aureus	37	34.9%
Strep pneumonia	17	16%
Strep epidermidis	20	18.8%
C.diphtheriae	7	6.9%
H.influenzae	10	9.4%
P.aeruginosa	6	5.6%
K.pneumoniae	3	2.8%
E.coli	6	5.6%
Total	106	100%

Among the organisms isolated from the lacrimal swab, the antibiotic sensitivity are Ciprofloxacin(38.8%), Ofloxacin(50.5%), Erythromycin (62.3%), Gentamicin(81.1%), , Chloramphenicol(88.2%), Amoxycillin (90.5%), Gatifloxacin(91.7%), Vancomycin(92.9%), Ceftriazone (95.2%) To bramycin(97.6%) and Cefuroxime(98.9%).

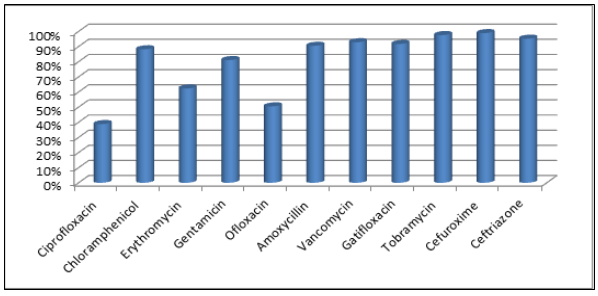

Fig1: Antibiotic sensitivity on the lacrimal swabs

Organisms isolated from the nasal swab include S.aureus(28.5%) followed by Strep. pneumonia(17.1%), H.influenzae (14.2%) P.aeruginosa (14.2%). (Table 2)

Table 2 : Distribution of various organisms isolated from Nasal swab culture

Organisms isolated	Frequency	Percentage
S.aureus	10	28.5%
Strep pneumoniae	6	17.1%
Strep epidermidis	3	8.9%
C.diphtheriae	2	5.7%
H.influenzae	5	14.2%
P.aeruginosa	5	14.2%
K.pneumoniae	2	5.7%
E.coli	2	5.7%
Total	35	100%

Organisms isolated from the conjunctival swab include S. aureus (32.6%) followed by Strep. pneumoniae(14.2%), K.pneumoniae (12.24%). (Table 3)

Table 3 : Distribution of various organisms isolated from conjunctival swab culture

Organisms isolated	Frequency	Percentage
S.aureus	16	32.7%
Strep.pneumoniae	7	14.2%
Strep.epidermidis	7	14.2%
C.diphtheriae	3	6.2%
H.influenzae	4	8.2%
P.aeruginosa	4	8.2%
K.pneumoniae	6	12.25%
E.coli	2	4%
Total	49	100%

The relation of the lacrimal sac with the conjunctival mucosa based on the gram stain showed that in 40% cases the Gram stain from lacrimal and conjunctival swab are similar. When cross tabulated and Chi square test was applied, the p value was found to be 0.04(<0.05), which shows that they are statistically significant. Whereas in only 27% cases the Gram stain between the lacrimal and nasal mucosa was similar. When cross tabulated and Chi square test was applied, the p value was found to be 0.409(>0.05), which shows that they are not statistically significant. It was also concluded that in Gram staining the bacteria from the lacrimal and the conjunctival swab were more related to each other than the bacteria from the lacrimal and the nasal swab and the difference between the groups were statistically significant with the p value of 0.018. On the contrary, on culturing the bacteria from all the three swabs, the difference between the relation of the lacrimal and conjunctival swab and lacrimal and nasal swab was not found to be statistically significant (p=0.672). The overall relation between the lacrimal, nasal and the conjunctival swab, with p value of 0.130, was found to be statistically insignificant. (Table 4)

Table 4 : Cross tabulation between the lacrimal ,nasal and conjunctival swab gram stain and culture

	Lacrimal and conjunctival swab	Lacrimal and nasal swab	P value
Gram stain	22	9	0.018
Culture	3	4	0.672
P value	0.000	0.162	

Chi square at 1 df = 2.005, P = 0.153
Chi square (with Yates' correction) at 1 df Chi = 0.950, p = 0.331
Fisher's Exact P = 0.130

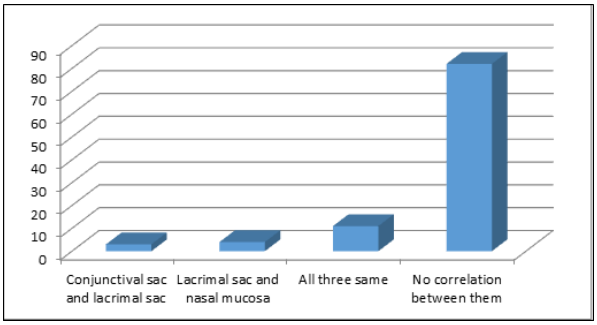

Fig 2: Co-relation between nasal, conjunctival and lacrimal isolates

DISCUSSION

Dacryocystitis is a disease of common occurrence. Its symptoms are troublesome and conspicuous and treatment is unrewarding .It affects middle aged and elderly, more commonly occurring in women than in men but found in all age group[3].

Chronic dacryocystitis is a more indolent form of dacryocystitis characterised by persistent low grade inflammation with mucopurulent discharge from the puncta[18]. The source of infection is mainly due to infection from the conjunctiva, nasal cavity (retrograde spread) or paranasal sinus, allergic rhinitis or deviated nasal septum [15].

Patel K. et al[15] found in majority of the patients the left eye was more commonly involved (56%) with epiphora (100%), and mucopurulent regurgitants (71%). Among the Gram-positive organisms isolated, S. aureus (41%) was common with sensitivity to ciprofloxacin (82.9%). Results of the conjunctival and nasal swab were Pseudomonas 2.3% and 19%, S.aureus 5.8% and 28.3%,Strep. pneumoniae 1.16% and 3.7% respectively. The cultures of the sac was found in 19% and 2.3% cases similar to nasal and conjunctival swab. In our study we found that the left eye was commonly involved (65%) with epiphora(100%) and mucopurulent regurgitates (53%). S. aureus (45.6%) was common with ciprofloxacin sensitivity (64.8%). Results of the conjunctival and nasal swab include P.aeruginosa 8.2% and 14.2%, S.aureus 32.6% and 28.5% ,Strep.pneumoniae 14.2% and 17.1% respectively. The cultures of the sac was found in 11% and 14% cases similar to nasal conjunctival swab.

Gupta S et al[9] found majority were females in age group of 31-40 years. He found 51.6% culture positive. S .albus was the most commonly isolated organism (18.2%) followed by S. aureus and were sensitive to tobramycin. The p value (0.17) was found to be statistically insignificant when the nasal, conjunctival and the lacrimal swab were compared. In our study we found majority were females in the age group of 31-40 years. 85% were culture positive with S.aureus as the most common isolate and majority were sensitive to tobramycin and cephalosporins. We found the overall relation between the lacrimal, nasal and the conjunctival swab, with p value of 0.130, was statistically insignificant.

Chhawania P.K et al[7] found that the common age of dacryocystitis was in 30-60 years (64%) with female preponderance (78.1%). He found that the most common organism was Strep.epidermidis (40.26%) followed by S.aureus (28.23%), Strep. pneumonia (23.58%).He also said that the nasal duct is especially vulnerable and likely to upset the whole delicate mechanism. In our study we found the common age group was 31-10 years (40%) with female dominance (61%). The most common organism were S. aureus 34.9 %,Strep epidermidis 18.8%% and Strep. pneumoniae 16%. We found no similarity in between the flora of the sac, conjunctiva and the nose on culture.

CONCLUSION

Most common organism causing chronic dacryocystitis wass S.aureus and were mostly sensitive to Cefuroxime and Tobramycin. S.aureus was also most common isolate from nasal and conjunctival swab. No co-relation was found between the flora of conjunctival, nasal and lacrimal isolates.

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CONFLICT OF INTEREST:

The authors declare that they have no conflict of interest.

STATEMENT OF HUMAN AND ANIMAL RIGHTS

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki .

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