MICROBIOLOGICAL STUDY AND ANTIBIOGRAM IN CONGENITAL NASOLACRIMAL DUCT OBSTRUCTION- AT A TERTIARY CARE EYE HOSPITAL

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ABSTRACT

BACKGROUND

Commonest cause for congenital dacryocystitis is obstruction at the lower end of nasolacrimal duct. It is due to an imperforate membrane at the lower end of nasolacrimal duct and usually affects the babies with permanent closure of the Hasner membrane.

The aim of this study was to identify the organisms responsible and to determine the antibiotic sensitivity pattern in case of Congenital Nasolacrimal Duct Obstruction (CNLDO).

MATERIALS AND METHODS

This descriptive study was conducted on 183 eyes of 175 patients under the age of 2 years attending a Government Tertiary Care Eye Hospital from January 2017 to January 2018. In this study, infants and toddlers attending paediatric OPD with nasolacrimal duct obstruction problems, discharge was collected from the puncta with a moistened sterile swab without touching the lid margin or adjacent skin and sent for culture and sensitivity test. All the patients were kept on antibiotic drops depending on the sensitivity test reports and managed conservatively.
Study Design- Descriptive study.

RESULTS

Out of 175 patients, Gram +ve cocci constituted the major bacterial isolate 97.0.1% with Staphylococcus epidermidis 73.88% predominating. Most effective antibiotic was Gatifloxacin.

CONCLUSION

The commonest organism found was Staphylococcus epidermidis sensitive to Gatifloxacin and the conservative treatment of congenital dacryocystitis shows excellent results, providing treatment based on antibiogram.

KEY WORDS

Congenital Dacryocystitis, Antibiotic Sensitivity, Nasolacrimal Duct Bacterial Isolate, Nasolacrimal Duct Obstruction.

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BACKGROUND

Commonest cause for congenital Dacryocystitis is obstruction at the lower end of nasolacrimal duct.[1] It is due to an imperforate membrane at the lower end of nasolacrimal duct and usually affects the babies with permanent closure of the Hasner membrane.[2,3] In more than 90% of the new-borns, this membrane perforates spontaneously during first 4 - 6 weeks. Sometimes, the perforation occurs after 6 - 12 months.[4,5] After the age of 12 months, probing and syringing to open the Hasner membrane is indicated.[6] This study is conducted at a tertiary care Government Eye Hospital from south India. Most of the cases were already on medications prescribed by General Practitioners, Paediatricians and Ophthalmologists from periphery. Most of the studies pertaining to microbiological and aetiological are devoted to adult patients. Minor number of studies are devoted congenital dacryocystitis. Previous studies conducted have shown changing patterns of causative organisms with time and geographical area. In the present study our aim was to know the common type of bacteria associated with congenital dacryocystitis and their sensitivity, resistance to commonly used antibiotics and guide the clinician in his choice of medication, as only a few studies are available reporting on congenital dacryocystitis and its treatment based on antibiogram.[7,8]

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MATERIALS AND METHODS

This descriptive study was conducted on 183 eyes of 175 patients (Out of which 100 were male patients (57.14%) and 75 were female patients (42.86% patients) attending paediatric ophthalmology clinic at Sarojini Devi Eye Hospital, Hyderabad, during January 2017 to January 2018. Mainly, paediatric cases less than 2 years of age with lacrimation and mucopurulent discharge were included. Cases treated by paediatricians and ophthalmologists which were put on conventional broad-spectrum antibiotics and which did not respond have come to paediatric ophthalmology department at Sarojini Devi Eye Hospital, Hyderabad. After antibiogram

and proper antibiotic selection, mainly on topical eye drops these cases have improved.

Those cases previously interfered surgically in the past, the cases with punctual abnormalities and lid abnormalities were excluded from this study. Cases with conditions like blepharitis, conjunctivitis and systemic causes like upper respiratory tract infections which lead to watering were also excluded. Age of presentation was from 0 - 24 months. 167 cases (95.43%) were unilateral and 8 (4.57%) were bilateral. In 96 cases (54.86%) right eye was involved, 71 cases (40.57%) left eye was involved and 8 cases (4.57%) both eyes were involved.

The material for bacteriological analysis was taken from the affected eye in the form of regurgitant material or the conjunctival discharge itself if there was no regurgitation. The material was taken on sterile cotton tipped swabs, was stroked immediately on blood-agar and MacConkey's agar plates and intubated at 37^0 C for 48 hours before declaring them sterile. Organism isolated was then tested for sensitivity to various antibiotics by disc diffusion techniques.[9] After the sensitivity report, appropriate antibiotic was instituted followed by massage over lacrimal sac area and cleaning of the discharge. This conservative line of treatment was given for a period of 3 months. Complete cure was defined as the absence of watering and discharge, which was achieved by either medical means or surgical means (probing and syringing) in routine clinical practice.

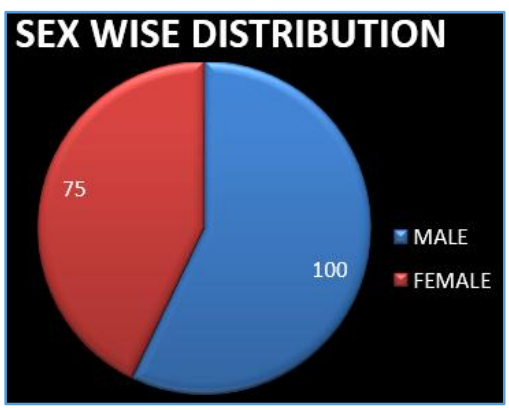
RESULTS

The bacteriological profile in the cases under study and their antibiotic sensitivity patterns are depicted in the following tables. Positive cultures were obtained in 134 eyes (73.22%), 49 eyes (26.78%) were sterile. Gram positive cocci 130 eyes (97.01%) were the commonest type of bacteria isolated, of which staphylococcus epidermidis constituted 99 cases (73.88%) followed by Staphylococcus aureus 16 cases (11.94%) and Streptococcus 6 cases (4.48%). In this study 100 cases (57.14%) were males and 75 cases (42.86%) were females with unilateral eye involvement (95.62%) was more frequent than bilateral (4.37%). Fungal isolate (Aspergillus) was identified in single case.

Sensitivity pattern was determined, and most effective antibiotic was Gatifloxacin and Chloramphenicol.

Sex	No. of Cases	Percentage
Male	100	57.14%
Female	75	42.86%

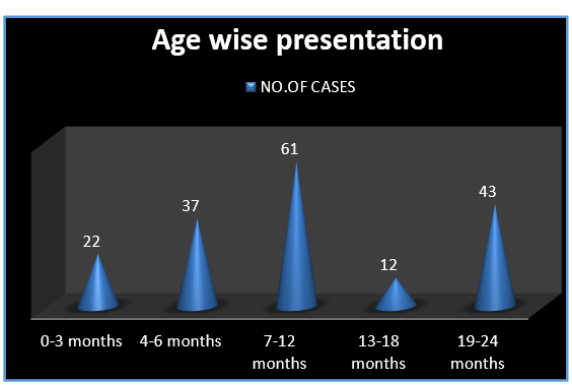
Table 1. Sex Wise Distribution



Graph 1. Sex Wise Distribution

Age of Presentation	No. of Cases	Percentage
0-3 months	22	12.57%
4-6 months	37	21.14%
7-12 months	61	34.86%
13-18 months	12	06.86%
19-24 months	43	24.57%

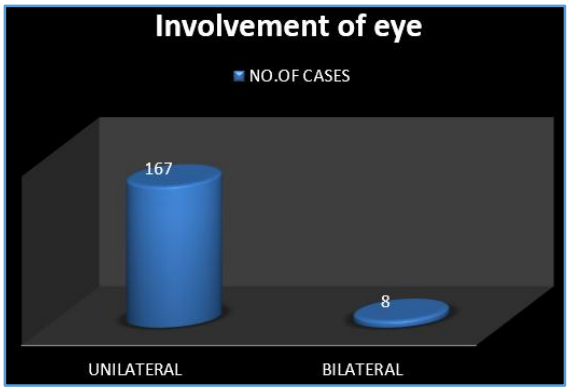
Table 2. Age Wise Presentation



Graph 2. Age Wise Presentation

Eyes Involved	No. of Cases	Percentage
Unilateral	167	95.43%
Bilateral	8	04.57%

Table 3. Involvement of Eye



Graph 3. Involvement of Eye

Side	No. of Patients	Percentage
Right	96	54.86%
Left	71	40.57%
Bilateral	08	04.57%
Table 4. Laterality		

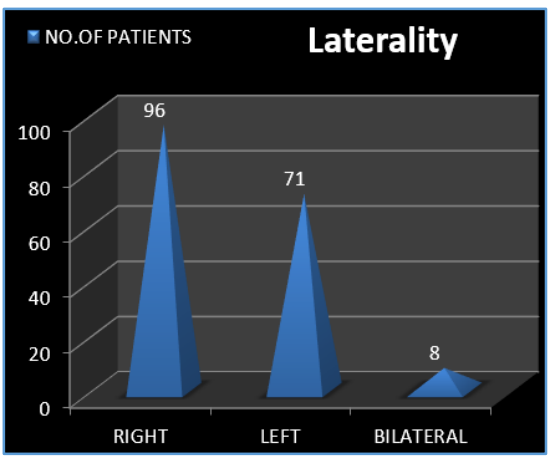
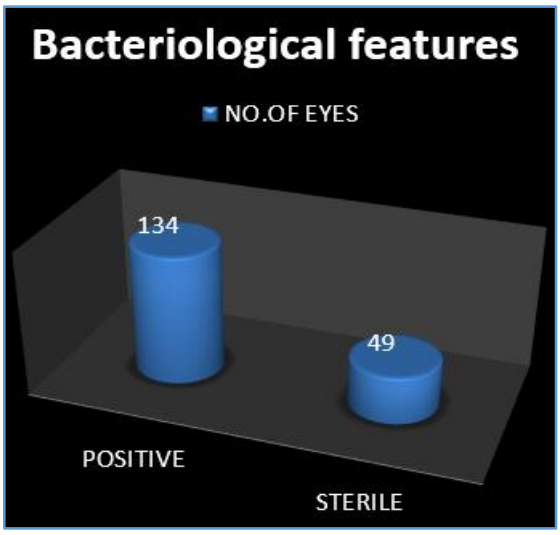


Table 4. Laterality

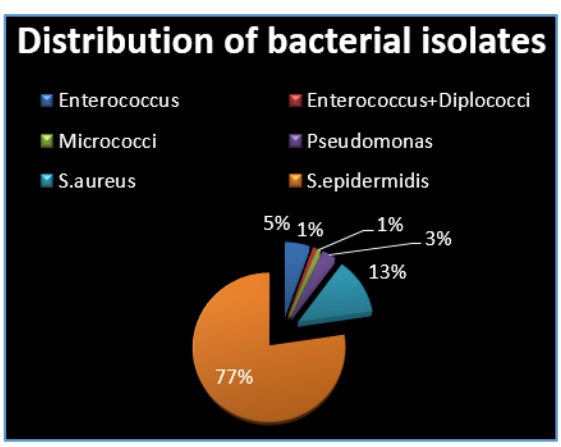
Bacterial Growth	No. of Eyes	Percentage
Positive	134	73.22%
Sterile	49	26.78%
Table 5. Bacteriological Features		

***Fungal Culture - 1 - Aspergillus.



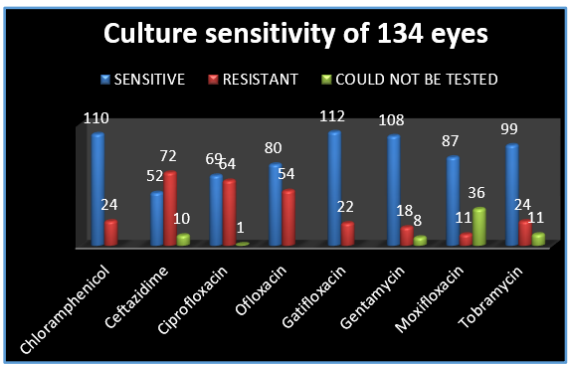
Graph 5. Bacteriological Features

Organism	No. of Cases	Percentage
Enterococcus	7	5.22%
Enterococcus + Diplococci	1	0.75%
Micrococci	1	0.75%
Pseudomonas	4	2.98%
S. aureus	16	11.94%
S. epidermidis	99	73.88%
Streptococci	6	4.48%
Table 6. Distribution of Bacterial Isolates		



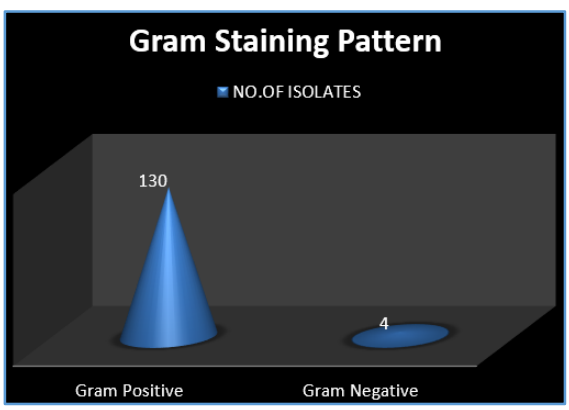
Graph 6. Distribution of Bacterial Isolates

Drug	Sensitive	Resistant	Could not be Tested
Chloramphenicol	110	24	---
Ceftazidime	52	72	10
Ciprofloxacin	69	64	1
Ofloxacin	80	54	---
Gatifloxacin	112	22	---
Gentamycin	108	18	8
Moxifloxacin	87	11	36
Tobramycin	99	24	11
Table 7. Culture Sensitivity of 134 Eyes			



Graph 7. Culture Sensitivity of 134 Eyes

Gram Stain	No. of Isolates	Percentage
Gram Positive	130	97.01%
Gram Negative	4	2.99%
Table 8. Gram Staining Pattern		



Graph 8. Gram Staining Pattern

Total no. of patients ---- 175
Total no. of eyes ---- 183

DISCUSSION

Bacteriology of congenital dacryocystitis acquires great significance in view of its bearing on the therapeutics of the disease. This study therefore deals with this problem in a systemic manner.

In our study, 61 cases (34.86%) had the history of development of symptoms during 7 - 12 months. All of them were less than 2 years of age at the time of presentation. Earlier study by Guerry D et al[10] found unilateral eye involvement to be (91.7%) and bilateral to be (8.3%). Our study showed positive culture results in 134 eyes (73.22%) of samples with Gram positive cocci being the commonest type of bacteria isolated (97.01% of 130 eyes). Out of these, staphylococcus epidermidis constituted (73.88% of 99 eyes).

The most effective antibiotic against all organisms were Gatifloxacin and chloramphenicol.

Although, staphylococcus epidermidis has been assigned the role of a normal commensal of the conjunctiva along with diphtheroids, a number of reports have appeared of its being pathogenic in postoperative ocular infections, blepharoconjunctivitis and corneal ulcers.[11,12,13,14,15]

Hence, it will be unwise to ignore these organisms as any more as mere commensals. It has also been shown to be associated with congenital dacryocystitis. This study highlights this fact.

Thus, any ocular infection including congenital dacryocystitis should be routinely investigated for staphylococcus epidermidis and its sensitivity pattern. According to antibiogram we changed the topical antibiotics eye drops, majority of them were kept on Gatifloxacin, chloramphenicol, moxifloxacin and tobramycin eye drops for a period of 3 months. The patient's attendants were also trained to do digital massage in the lacrimal sac area. In few cases along with topical, systemic antibiotics and antihistamines were prescribed to control common cold and infection. The cases which have shown sterile cultures were also kept on Gatifloxacin topical eye drops. At the end of 3 months of treatment patients ageing one year and below, 115 patients out of 120 (95.8%) have improved. The 40 patients out of 55 patients of ageing more than 1 year have improved (72%). Those cases not improved by symptoms and signs like epiphora were taken for lacrimal probing under general anaesthesia at the end of 3 months of treatment. In our present study, we have shown significant positive results under the age of 1 year patients. The fungal isolate probably indicates the injudicious use of antibiotics.

CONCLUSION

Thus, bacteriology followed by sensitivity testing of various organisms to different antibiotics bears much significance with regards to therapeutics of the disease and guides the clinician better in his choice of medication. Our study therefore has been an attempt in this direction.

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