



A STUDY ON CLINICO-MICROBIOLOGICAL PROFILE OF CONJUNCTIVAL FLORA IN CONGENITAL DACROCYSTITIS

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ABSTRACT Dacryocystitis is an inflammation of the lacrimal sac and duct. It may be congenital or acquired. It is an important cause of ocular morbidity both in children and adults. **PURPOSE**-To isolate & identify the causative bacteria from clinically diagnosed cases of congenital dacryocystitis & to study the organism in relation to clinical profile. **MATERIALS & METHODS**-Gram stain & Giemsa stain, Culture media, 10% KOH preparation, MacConkey agar, 5% Sheep Blood agar, Chocolate agar. Biochemical tests on Isolated colonies from the plates were identified by Colony morphology, Gram stain, Oxidase test, Catalase test, and Motility. For further identification isolated colony was inoculated into peptone water and Hiss serum for fastidious bacteria, which was incubated aerobically and inoculated into appropriate medias for biochemical tests like Indole production, Methyl red, Voges-proskauer test, Citrate utilization, Urease hydrolysis, Sugar fermentation, Triple Sugar Iron agar, Nitrate reduction test and Amino acids decarboxylase tests. The specific tests like Inulin fermentation, Optochin sensitivity test and Bile solubility test were done. Antimicrobial susceptibility tests: The standardized Kirby-Bauer disc diffusion test of the Clinical and Laboratory Standards Institute (formerly NCCLS) was used for testing. The media used was Mueller-Hinton agar for non-fastidious organisms. 5% Sheep Blood agar added to Mueller-Hinton agar for fastidious organisms and Haemophilus Test Medium was used for testing Haemophilus influenzae and it was read after 16-18 hours. The zone of inhibition was measured and reported as Susceptible or Resistant. For detection of methicillin resistant Staphylococcus aureus detection disc tests for methicillin resistance was done using 10µg oxacillin disc on Mueller-Hinton agar containing 4% sodium chloride. **RESULTS**-In our study, females are more (7) as compared to males (4) & the culture positive cases were 10 and in 1 case culture showed no bacterial growth. The most frequent Gram-positive isolates are Streptococcus pneumoniae 7 (63.63%) followed by Staphylococcus aureus 1 (9.09%) and the most frequent Gram-negative isolates are Pseudomonas aeruginosa 3 (27.27%). **CONCLUSION**-In our study the Gram-positive isolates were most sensitive to Vancomycin (100%), followed by Tobramycin and Linezolid (97.14%). Least sensitive antibiotic against Gram-positive organisms was Penicillin (51.42%). The Gram-negative organisms were most sensitive to Tobramycin and Gentamicin (100%), followed by Amikacin, Ofloxacin (92.59%), Cefepime (88.88%). Least sensitive antibiotic against Gram-negative organisms was Ciprofloxacin (77.77%)

KEYWORDS : nasolacrimal duct, congenital dacryocystitis, amniontocele

INTRODUCTION

This mucus membrane-lined tract is contiguous with two surfaces (conjunctival and nasal mucosal) that are normally colonized with bacteria. The functional purpose of the lacrimal excretory system is to drain tears from the eye into the nasal cavity. So, whenever there is obstruction in this nasolacrimal pathway, either in the nose or in the sac the normal commensals become pathogenic and result in infection and inflammation.

The lower end of the nasolacrimal duct, in the region of the valve of Hasner, is the last portion of the lacrimal drainage system to canalize, with complete patency most commonly occurring soon after birth. Signs of congenital dacryocystitis include epiphora, matting of eyelashes, & gentle pressure over lacrimal sac may cause mucopurulent reflex. Differential diagnosis includes other congenital causes of watering eye, such as punctal atresia, congenital glaucoma, chronic conjunctivitis, (Eg-chlamydia), keratitis, uveitis. On the other hand Congenital dacryocele (amniontocele) is a collection of amniotic fluid or mucus in the lacrimal sac caused by an imperforate Hasner valve. Presentation is perinatal with a bluish cystic swelling at or below the medial canthus accompanied by an epiphora. It should not be mistaken for an Encephalocele, it is usually characterized by a pulsatile swelling above the medial canthal tendon.

METHODS

This study on Dacryocystitis was carried out in the Department of Ophthalmology, Kurnool Medical College, Kurnool, during the period June 2021 to June 2022. A total of 11 clinically diagnosed cases of Dacryocystitis attending Ophthalmology out-patient department at our Padmabhushan Dr P.Siva Reddy Regional Eye Hospital, Kurnool Medical College, Kurnool were taken for the study (see fig.1) After

clinical diagnosis of Dacryocystitis specimens were collected with the help of Microbiologist & were taken for culture & sensitivity. Gram stain & Giemsa stain (see fig.3), Culture media, 10% KOH were used. Specimen collection, processing of specimens & The specimens were cultured on dried plates of MacConkey agar at 37°C for 18-24 hours and on 5% Sheep Blood agar and Chocolate agar with 5-10% CO₂ atmosphere at 37°C for 24 - 48 hours. Biochemical tests on Isolated colonies from the plates were identified by Colony morphology, Gram stain, Oxidase test, Catalase test, and Motility. For further identification isolated colony was inoculated into peptone water and Hiss serum for fastidious bacteria, which was incubated aerobically and inoculated into appropriate medias for biochemical tests like Indole production, Methyl red, Voges-proskauer test, Citrate utilization, Urease hydrolysis, Sugar fermentation, Triple Sugar Iron agar, Nitrate reduction test and Amino acids decarboxylase tests. The specific tests like Inulin fermentation, Optochin sensitivity test and Bile solubility test was used to identify Streptococcus pneumoniae. Slide and Tube Coagulase test was used to identify Staphylococcus aureus. & Antimicrobial susceptibility tests: The standardized Kirby-Bauer disc diffusion test of the Clinical and Laboratory Standards Institute (formerly NCCLS) was used for testing. The media used was Mueller-Hinton agar for non-fastidious organisms. 5% Sheep Blood agar added to Mueller-Hinton agar for fastidious organisms and Haemophilus Test Medium was used for testing Haemophilus influenzae and it was read after 16-18 hours. Inoculum turbidity was adjusted to 0.5 McFarland turbidity tube. A lawn culture was made on the surface of medium using sterile cotton swabs and antimicrobial discs were applied. The plates were incubated for 18-24 hours for non-fastidious and under 5% CO₂ for 24 - 48 hours at 37 degree C for fastidious organisms. The zone of inhibition was measured and reported as Susceptible or Resistant. For detection of methicillin

resistant *Staphylococcus aureus* detection disc tests for methicillin resistance was done using 10µg oxacillin disc on Mueller-Hinton agar containing 4% sodium chloride.

RESULTS

In our study, females are more (7) as compared to males (4). majority of the cases presented within 5 to 8 months of birth (see fig.1).In congenital Dacryocystitis, the culture positive cases were 10 and in 1 case culture showed no bacterial growth. The most frequent Gram-positive isolates are *Streptococcus pneumoniae* 7 (63.63%) followed by *Staphylococcus aureus* 1 (9.09%) and the most frequent Gram-negative isolates are *Pseudomonas aeruginosa* 3 (27.27%).(see fig.2 & 4)

FIG. 1 Infant Age Of Presentation

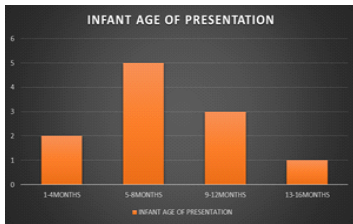


FIG.2 Organisms Isolated On Culture



CONCLUSION

In our study the Gram-positive isolates were most sensitive to Vancomycin (100%), followed by Tobramycin and Linezolid (97.14 %). Least sensitive antibiotic against Gram-positive organisms was Penicillin (51.42 %). The Gram-negative organisms were most sensitive to Tobramycin and Gentamicin (100%), followed by Amikacin, Ofloxacin (92.59 %), Cefepime (88.88 %). Least sensitive antibiotic against Gram-negative organisms was Ciprofloxacin (77.77 %).(see in fig.5)

FIG.3 Gram stain with Gram-positive cocci in cluster

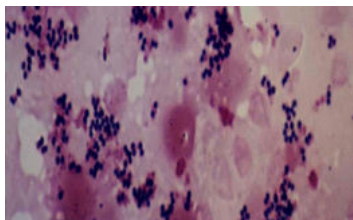


FIG.4 Mixed colonies of Pseudomonas Aeruginosa and Staphylococcus Aureus on nutrient



FIG.5 Sensitivity plate of Streptococcus pneumoniae



MODALITIES OF TREATMENT FOLLOWED FOR CONGENITAL DACRYOCYSTITIS-

1. Crigler Massage over the lacrimal sac area and topical antibiotics constitute the treatment of congenital NLD block, up to 6-8 weeks of age. If massage is done daily, epiphora will disappear in 96% to 98% of infants by the age of 1 year .

2. Lacrimal syringing (irrigation) with normal saline and antibiotic solution .It should be added to the conservative treatment if the condition is not cured up to the age of 2 months.

3. Probing of NLD with Bowman's probe . It should be performed; in case the condition is not cured by the age of 3-4 months. Some surgeons prefer to wait till the age of 6 months to 1 year. Study of primary surgical management have found probing to be successful in 70%–97% of cases, with many reports around 90%²

4. NASOLACRIMAL DUCT STENT INSERTION is used as a primary procedure or following failure of probing. The success rate as a primary procedure is estimated to be between 79 to 96% .³

5. BALLOON CATHETER DILATION Success of this procedure as a primary or secondary mode has been estimated between 53 and 95%.

6. NASAL ENDOSCOPY is sometimes used in conjunction with probing, stent insertion and balloon catheter dilation in the treatment of persistent nasolacrimal duct obstruction. It is also frequently used in the treatment of congenital dacryocystoceles to identify and marsupialize the intranasal cyst

7. Dacryocystorhinostomy (DCR) operations When the child is brought very late or repeated probing is a failure, then conservative treatment by massaging, topical antibiotics and intermittent lacrimal syringing should be continued till the age of 4 years. After this, DCR operation can be done⁴

We conclude by emphasising the fact that the clinico microbiological profile of congenital dacryocystitis in my study revealed pneumococcus Sps. were predominant .Congenital dacryocystitis when left untreated can lead to maceration or excoriation of skin overlying the lacrimal apparatus .Henceforth proper culture & sensitivity along with appropriate treatment strategy can help curb dacryocystitis in this age group.

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