Original Article

Hydrostatic massage improves the treatment of congenital naso-lacrimal duct obstruction (CNLDO) within one year of age

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Abstract

Objective: To find out the effect of hydrostatic massage as a part of conservative management of Congenital naso-lacrimal duct obstruction (CNLDO). **Materials and Methods:** This prospective and comparative study, was conducted on patients suffering from CNLDO and reported in outpatient department of pediatric ophthalmology in National Institute of Ophthalmology (NIO) Dhaka between January 2023 to September 2023. A protocol was submitted and after getting the approval from the ethical committee a questionnaire and a proforma was prepared for data collection, record and follow up of patients. Informed written consent was obtained from the parents. CNLDO diagnosis was made on clinical examination and sac regurgitation test. All collected data were checked and verified thoroughly to reduce the inconsistency. Quality of data was always ensured. Analysis of data was done by "Statistical Package for Social Science" (SPSS, version 24.0) in the computer. Total 200 patients were included in the study comprising 94(47%) male and 106(53%) were female within one year of age. They were divided into two groups. Group-A contained 120 patients, hydrostatic massage and topical eye drop were advised to each patient of with the regimen of 10 strokes of hydrostatic massage four times a day after demonstration the proper technique to the parents. Group-B contained 80 patients those were given only topical Eye drop but no hydrostatic massage. follow up was done after 1 to 4 months. **Results:** Hydrostatic massage for CNLDO in Group-A (Total120) was successful in 101 (84.16%) patients and failed in 19 (15.84%)) patients and Group B (Total 80), Not improved 66 (82.50%) patients, improved by only topical antibiotic drop 14 (17.50%) patients. **Conclusion:** CNLDO usually presents complaints of watering or watering with discharge. The outcome of conservative management comprises with hydrostatic massage at lacrimal sac are promising. The success rate declines with increase of age.

Keywords: Congenital of Naso-Lacrimal Duct Obstruction (CNLDO)

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Introduction

Epiphora is a Greek word meaning down pour being rereferred to out follow of tears down the face, which is due to obstruction of lacrimal passage. Nasolacrimal duct obstruction is the blockage of the lacrimal drainage system. In children most of the nasolacrimal duct obstruction is congenital. Congenital nasolacrimal duct obstruction occurs in approximately 5% of normal newborn infants[1]. The blockage occurs most commonly at the valve of Hasner at the distal end of the duct. There is no sex and genetic predisposition[2]. The blockage can be unilateral or bilateral. CNLDO is a frequent entity in pediatric age group[3,4,5]. The rate of spontaneous resolution is estimated to be 90% within the first year of life[5]. The etiology of congenital nasolacrimal duct obstruction is most commonly a membranous obstruction at the valve of Hasner at the distal end of the nasolacrimal duct. General

stenosis of the duct is the second most common cause of duct obstruction. Congenital proximal lacrimal outflow dysgenesis involves mal development of the punctum and canaliculus. Proximal outflow dysgenesis can occur concurrently with distal obstruction. Congenital lacrimal sac mucocele or dacryocystocele occurs when there is a membranous cyst extending from the distal end of the duct into the nose. Hydrostatic massage over the lacrimal sac is thought to be useful management step for CNLDO. If there is infection, then topical antibiotics are given as supplements along with sac massage. Parents should be properly educated to perform massage technique. It is advisable to place one finger over the medial canthal area on the inferior part of anterior lacrimal crest and slide the finger in inferior direction, applying moderate pressure over the lacrimal sac and nasolacrimal duct. About 10 strokes should be given four times a day. Conservative treatment is continued until epiphora resolves up to one year, if there are no other complications like acute dacryocystitis etc. Repeated courses of topical and sometime systemic antibiotics is used to treat the discharge associated with CNLDO[6,7]. All the patients under one year of age with CNLDO should be conservatively treated with hydrostatic massage before surgical intervention, with the hope of spontaneous resolution and to get patency of duct by applying hydrostatic massage[8,9].

Materials and Methods

This prospective and comparative study was conducted on patients suffering from CNLDO and reported in outpatient department of pediatric ophthalmology in National Institute of Ophthalmology (NIO) Dhaka between January 2023 to March 2024. A protocol was submitted and after getting the approval from the ethical committee a questionnaire and a proforma was prepared for data collection, record and follow up of patients. Informed consent was obtained from the parents. CNLDO diagnosis was made on clinical examination and sac regurgitation test.

All collected data were checked and verified thoroughly to reduce the inconsistency. Quality of data was always ensured. Analysis of data was done by "Statistical Package for Social Science" (SPSS, version 24.0) in the computer. Total 200 patients were included in the study comprising 94(47%) male and 106(53%) were female within one year of age. They were divided into two groups. Group-A contained 120 patients, hydrostatic massage and topical eye drop were advised to each patient of with the regimen of 10 strokes of hydrostatic massage four times a day after demonstration the proper technique to the parents. Group-B contained 80 patients those were given only topical Eye drop but no hydrostatic massage. Follow up was done after 1 to 4 months.

Results

All those patients were considered properly treated who were symptom free and no regurgitation was present.

Table I: Shows age distribution: Out of total 200 patient less than one month of age 13.50%, within 1 month to 3 months 58.50%, within 4 months to 7 months 20.50%, within 8months to 12 months to 7.50%.

Age	Frequency	Percentage
< 1 month	27	13.50%
1M-3M	117	58.50%
4M-7M	41	20.50%
8M-12M	15	7.50%

Pie Chart-1: Shows Gender distribution: Out of total 200 patients in this study found 94 (47%) male and 106 (53%) were female.

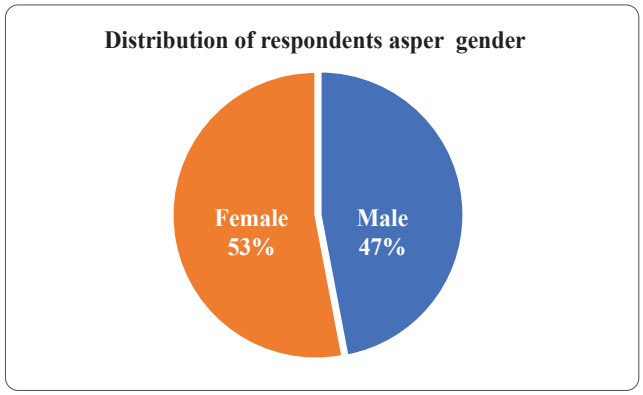

Table II: Shows application of hydrostatic massage for CNLDO in Group-A, out of total 120, successful in 101(84.5%) patients by hydrostatic pressure and failed (Unsuccessful) 19 (15.5%) patients.

Group	Frequency	Percentage
Yes (Successful	101	84.5%
No (Unsuccessful)	19	15.5%

Table III: Among Group-A, Improved total 101 patients and those were again sub divided into Group A-1 Improvement (within 1month to3 months) 75.24%, Group A-2 Improvement (within 4 months to7 months) 19.80%, Group A-3 Improvement (within 8 months to 12 months) 4.96%, to find the time of improvement.

Group	Age	Frequency	Percentage
Group A-1	1M-3M	76	75.24%
Group A-2	4M-7M	20	19.80%
Group A-3	8M-12M	05	4.96%

Table IV: In Group-B, Out of Total 80 patient, not improved 66 (82.50%) patients and improved 14 (17.50%) patients by only topical antibiotic drop.

Group	Frequency	Percentage
No (Unsuccessful)	66	82.50%
Yes (Successful)	14	17.50%

Discussion

This prospective and comparative study was designed to know the effect of hydrostatic massage as a part of conservative treatment in CNLDO. The study revealed the success rate of hydrostatic massage is 84.16 % and success rate was higher within first 3 months of age 75.24 % then 4- 8 month of age group was 19.80 % and in the age group of 8-12 months it was 4.96 %. It shows that at earlier age the outcome is better, success rate declines when the age of the patient increases. Various national and international studies have been conducted regarding the management of CNLDO addressing merits and demerits of every modality with the standard management procedure and the first step is to commence with conservative treatment with hydrostatic massage of lacrimal sac and topical antibiotics. If this management fails then probing

should be taken in to consideration[10,11]. Revised literature has shown that spontaneous resolution with conservative management usually takes place at the age of six months. Study of Basel T Baarah, MD.et al has shown that with hydrostatic massage and topical drop treatment there was 77.1% success in CNLDO which has similarities to our study with group B patients[12]. Gholam Hossein Yaghoubi, MD et al has reported 100% success rate in CNLDO with conservative treatment with hydrostatic massage of lacrimal sac and antibiotics[13]. Study conducted by Jamshed Nasir, Mueen Mohyuddin, Shahid A Bhatti has reported 90% success rate with conservative treatment by hydrostatic massage of CNLDO, which is comparable with our study[14]. Study of Rajat Maheshwari et al has reported the success rate of hydrostatic massage as treatment of CNLDO to be 96% which is better than our study[15]. Our study has strong variation of results in unsuccessful patients with national and international study. This variation may be due to improper hydrostatic massage of lacrimal sac in CNLDO. Qasem Hammory et al has reported in their study, success rate of 82.5% with hydrostatic massage and topical eye drop as treatment of CNLDO[16]. The variations in results with other studies may be due to lack of education of the parents regarding hydrostatic massage of lacrimal sac. But in other studies, usually the research workers have not divided the patients on hydrostatic massage variable but have taken as a whole.

Conclusion

CNLDO is a common ophthalmic problem in infants. Usually presents with the complaints of watering or watering with discharge. Outcome of conservative management comprises with hydrostatic massage at lacrimal sac and topical antibiotics are promising. Success rate declines with increase of age. Parents of the patients should be properly educated regarding the technique; it should be practically demonstrated to them.

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