

Research Article

Role of Conservative Measures in Management of Pediatric Epiphora



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Abstract

Objective: to evaluate the efficacy of conservative and medical management of pediatric congenital nasolacrimal duct obstruction (CNLDO) associated with nasal allergy. **Method:** The current research is a prospective study on 28 pediatric cases (40 eyes) visiting ENT and ophthalmology departments of Minia university hospital presented with epiphora due to CNLDO above age of 1 year and below the age of 8 years. The epiphora is associated with nasal allergy. Those cases had been received medical and conservative treatment for 3 months.

Results: All 28 cases received conservative measures and medical treatment prescribed by ophthalmology and E.N.T doctors. These measures were successful in cure of epiphora in 11 of 28 patients (16 of 40 eyes). The overall success rate is 39.3% of our patients (40% of eyes).

Conclusion: We showed for the first time the impact of E.N.T evaluation and nasal allergy conservative management on the outcome of CNLDO from total number of 28 patients up to 40% showed improvement with medical treatment. So, many pediatric cases will not need invasive or surgical intervention. Lead to minimizing childhood morbidity as regarding hazards of general anesthesia and or surgical complications.

Keywords: CNLDO, nasal allergy, massage and medications

Introduction

Congenital nasolacrimal duct obstruction (CNLDO) is the commonest cause of pediatric epiphora. It can result from distal obstruction in the nasolacrimal duct, which is mostly resulted from an imperforate valve of Hasner due to failure of recanalization, just before the tear duct insertion toward the nasal cavity.; it can also result from bony abnormalities or stenosis of the inferior meatus. Most of infants with CNLDO spontaneously improves within the first year of life^[1].

The diagnosis of CNLDO is proved by the fluorescein dye disappearance test. Other

causes of pediatric epiphora, such as infantile glaucoma and foreign body and corneal infections should be excluded^[2].

Allergic rhinitis or nasal allergy is a wide spread disease affects large percentage of population including pediatrics. Due to close relation between paranasal sinuses and the tear duct, pathologies in sino-nasal cavities are considered exacerbating factors of CNLDO^[3,4].

Aim of this study

To evaluate the efficacy of conservative and medical management of pediatric CNLDO associated with nasal allergy.

Patients and Methods

The current research is a prospective non-randomized study on 28 pediatric cases (40 eyes) presented with epiphora due to CNLDO above age of 1 year and below the age of 8 years with no history of previous nasolacrimal surgery. The epiphora is associated with nasal allergy manifestations and or other rhinological complaints. Those cases visiting ENT and ophthalmology departments of Minia university hospital during the period between December 2020 and March 2023. Detailed history was taken from parents of the patients as regarding:

- 1-Epiphora
 - unilateral or bilateral
 - constant or intermittent
 - duration (acute or chronic)
 - **associated with purulent discharge or not. To exclude active infection**

2- Nasal allergic manifestations (sneezing, itching and rhinorrhea).

3-Nasal obstruction (unilateral/bilateral)

4-nasal discharge (unilateral/bilateral) + onset, course, duration and its characters.

5-history of snoring

6-history of trauma (accidental or surgical)

7-presence of irritation or previous surgical intervention.

*Full clinical assessment has been done for the patients in the form of:

a- complete E.N.T examination including nasal endoscopy to evaluate:

-nasal septum, turbinates that will have edematous boggy bluish or pale mucosa.

-inferior meatus for masses that could be causing obstruction

-middle meatus for signs of inflammation, mucopurulent discharge or polyp

* Serum IgE level is assessed for all of our patients with the following normal reference values.

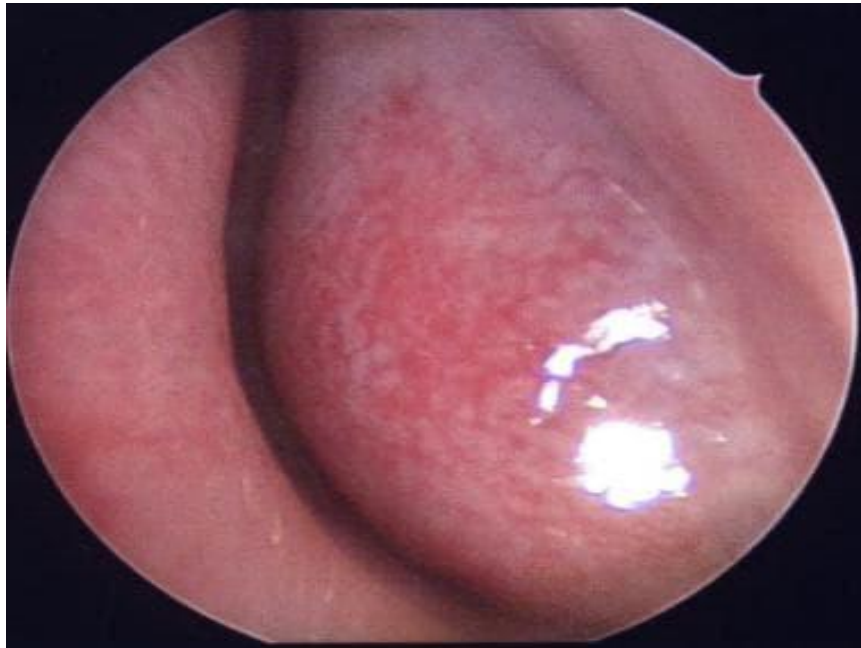


Fig.1: edematous bluish left inferior turbinate in CNLDO child associated with nasal allergy

Reference Values:

- < 1 year: 0 – 15 IU/mL
- 1 – 5 years: 0 – 60 IU/mL
- 6 – 9 years: 0 – 90 IU/mL
- 10 – 15 years: 0 – 200 IU/mL
- Adults: 0 – 100 IU/mL

Fig. 2: normal reference values of serum IgE level

All of our 28 patients received conservative medical measures including Crigler’s lacrimal sac massage and lid hygiene. mothers were instructed to use topical antibiotic eye drops for their children when an infected discharge occurred. The patients and their parents instructed about avoidance of allergen exposure and pediatric cases also started local/systemic decongestants, antihistaminic (its dose according to the age of the child), and intra nasal corticosteroid. Systemic steroids (with its dose 1mg/kg/day was prescribed in gradual withdrawal manner) for management of nasal allergy in conjunction with eye measures.

These conservative measures were continued for at least 3 months in all cases

and stopped if there was a recovery of CNLDO recorded in 11 patients (16 eyes).

Conservative measures were discontinued also if endoscopic guided probing or intubation was planned for uncured patients.

Ethical approval was taken before the study from the Faculty of Medicine Research ethics committee, Minia University (approval number 697:12/2020).

Results

This study was carried out on 28 pediatric patients (40 eyes) presented with CNLDO associated with nasal allergy. There were 13 boys and 15 girls in our study. The patients ranged in age from 1 to 8 years with a mean 4.82 ± 1.6 years.

Table (1): Baseline data of the studied patients

Variable	Subtype	Value Total N= 28 (100%)
Age	Mean \pm SD	4.82 \pm 1.6
	Range	(1-8)
Sex N (%)	Male	13 (46.4%)
	Female	15 (53.6%)

Table (2): Epiphora details among studied cases

Variable	Value Total N Children 28 Eyes 40	Percentage (%) (100%)
Unilateral		
No. of children	16	(57.14%)
No. of eyes	16	(40%)
Bilateral		
No. of children	12	(42.86%)
No. of eyes	24	(60%)

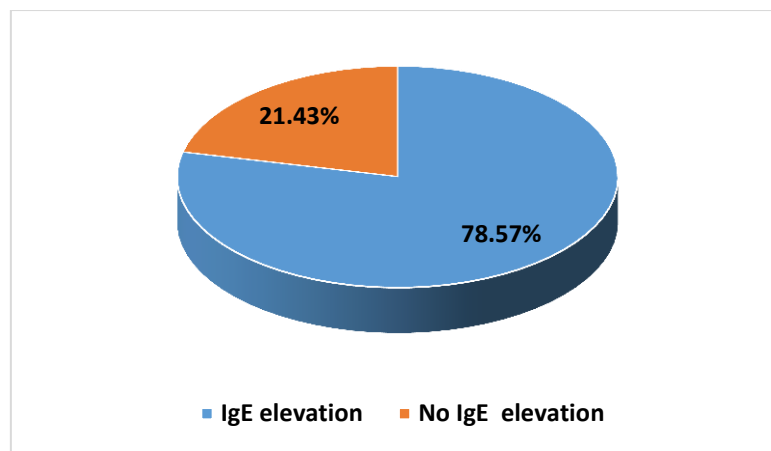


Fig. 3: Percentage of serum IgE elevation in our patients

There is an elevation of serum IgE level in 78.57% of our patients (22 of 28 cases) that is correlated with presence of nasal allergy. Treatment was considered as successful when all findings of CNLDO such as epiphora and mucous discharge were absent and no surgical intervention required together with improvement of manifestations of nasal allergy.

All 28 cases received conservative measures and medical treatment

prescribed by ophthalmology and E.N.T doctors. These lines were successful in cure of epiphora in 11 of 28 patients (16 of 40 eyes). Five cases have bilateral CNLDO and 6 patients have unilateral epiphora.

The overall success rate is 39.3% of our patients (40% of eyes). Seventeen patients (24 eyes) have not been improved and need endoscopic guided probing or silicon intubation.

Table (3): Results of conservative measures

Conservative measures	Total Children 28 Eyes 40
Improved	
No. of children	11 (39.3%)
No. of eyes	16 (40%)
Unimproved	
No. of children	17 (60.7%)
No. of eyes	24 (60%)

Discussion

Tears are manufactured in the lacrimal gland for lubricating the eyes. CNLDO leads to an abnormal overflow of tears onto the face termed epiphora^[5]. Infections could occur on the top of CNLDO, presenting with mucous secretions, eyelashes crustations, and eyelid dermatitis^[6].

Although, most pediatric cases of CNLDO recover spontaneously within the first 12 months of life, some may persist after this date and cause big troubles to both child and parents. So, a good therapeutic modality for CNLDO is required^[7]. Massaging the lacrimal sac using Criggler's technique is usually the first used management line. The massage raising the hydrostatic pressure, which leads to rupture of the membranous obstruction at the Hasner valve level with reliable success rates^[8].

NLDO is considered to result from fibrous stenosis secondary to local inflammation of the lacrimal drainage system. There are multiple studies have detecting one or more nasal pathologies or sinus diseases among pediatric patients affected by NLDO^[9].

Long standing or severe nasal allergy may associate CNLDO and hence, accompanied by copious watery nasal discharge, edematous nasal mucosa. Retained nasal secretions lead to occurrence of recurrent rhinosinusitis^[10]. Progression of allergic process and inflammatory edema associated with more severe CNLDO

because infectious and inflammatory pathologies of the nose and sinuses may ascend into the nasolacrimal duct from the nose and therefore cause harmful effect to the lacrimal apparatus, resulting in persistent fibrous occlusion^[11].

Changing the idea of CNLDO management in pediatric cases to include mandatory E.N.T assessment to detect associated nasal allergy or other sino-nasal pathology^[12]. Nasal allergy medications and allergen avoidance in conjunction with eye measures decrease the need for more invasive lines of management and produce reliable improvement in significant number of pediatric patients having CNLDO associated with nasal allergy.

Conclusion

We showed for the first time the impact of E.N.T evaluation and nasal allergy conservative management on the outcome of CNLDO from total number of 28 patients up to 40% showed improvement with medical treatment. So, many pediatric cases will not need invasive or surgical intervention. Lead to minimizing childhood morbidity as regarding hazards of general anesthesia and or surgical complications.

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Declaration of competing interest

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