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Original Article

Frequency of Congenital Nasolacrimal Duct Obstruction

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Abstract

Objectives: To determine the frequency of congenital nasolacrimal duct obstruction in children having congenital malformations of the eyes coming to the tertiary care eye hospital.
Study type, settings and duration: Descriptive study done at Al Shifa eye hospital Rawalpindi from January 2004 to December 2007.
Materials and Methods: Retrospective case record analysis of all children coming to the hospital with congenital malformation of nasolacrimal duct along with other congenital malformations of the eyes were included in the study. Children with no congenital anomalies of the eyes but having nasolacrimal duct obstruction were excluded.
Results: Congenital malformations of eyes were seen in 514 cases (289 males and 225 females). The age distribution was from birth to 15 years, with majority seen between 0-2 years. Out of 514 cases, 103 had congenital abnormalities of lacrimal apparatus with 20% having nasolacrimal duct obstruction. Persistent tears were the major presenting feature.
Conclusions: Nasolacrimal duct obstruction was the commonest congenital malformations of the eyes which can be easily corrected.
Key words: Nasolacrimal duct, congenital malformations.

Introduction

The production of the tears and removal of excess tears is the function of lacrimal apparatus which consist of lacrimal glands, puncti, canaliculi, lacrimal sac and nasolacrimal duct. The tears enter the nasal cavity via nasolacrimal duct from lacrimal sac.

The nasolacrimal duct develops from groove between lateral nasal prominence and maxillary prominence of developing face. The nasolacrimal duct usually canalizes at 8 months of fetal life but becomes patent only after birth.[1] Congenital obstruction of nasolacrimal duct with clinical symptoms occurs in approximately 6% of newborn infants.[1] Epiphora (watering of eye) or tearing is the most frequent symptom particularly during first year of life along with ocular discharge seen in up to 20% of all normal newborns[2] which develops within 6 weeks of birth in congenital nasolacrimal duct obstruction and it is bilateral in 1/3 of cases.[3] The dacryocystography is a simple, safe and standardized diagnostic procedure which, easily and accurately defines these obstructions and is less time consuming and less annoying to the patients with practically no complications.[4]

Most congenital obstructions of the nasolacrimal duct clear spontaneously or with medical management in 90% or more at about 1 year of age.[5,6] When conservative methods fail then other management plans are considered by the ophthalmologist.

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Materials and Methods

The three year data (January 2004 to December 2007) of congenital malformations of eyes was retrospectively collected from pediatric department of Al Shifa eye hospital Rawalpindi. Only data of cases with persistent tearing or watering from eyes and discharge was further analyzed.

Results

During 3 years, 514 congenital malformations of eyes were seen at the pediatric department. There were 289(56.2%) males and 225(43.8%) females whose ages ranged from day 1–15 years. Majority (222) of the patients were between 0-2 years (120 males,102 females). Age distribution is shown in Table-1.

Table 1: Distribution by age and gender.

Age years	*Male*	*Female*	*Total*	*%*
0 – 2	120	102	222	43.2
2.1 – 4	35	30	65	12.6
4.1 – 6	40	26	66	12.8
6.1 – 8	34	21	55	10.7
8.1 – 10	33	23	56	10.9
10.1 – 12	22	19	41	8.0
12.1 – 15	5	4	09	1.8
Total	289	225	514	100

Common congenital abnormalities of the eyes were, cataract in 116(22.6%) cases, lacrimal apparatus anomalies in 103(20%), ptosis in 45(8.8%), pigmentary retinal degeneration in 35(6.8%), microopthalmos/ anopthalmos in 26(5%), optic atrophy in 23(4.5%) followed by other abnormalities (Table-2).

Table 2: Type and frequency of congenital anomalies.

S.#	*Disease*	*Total*	*%*
01	Cataracts	116	22.6
02	Lacrimal apparatus anomalies	103	20.0
03	Ptosis	45	8.8
04	Pigmentary retinal degeneration	35	6.8
05	Microphthalmos Anophthalmos	26	5.0
06	Optic atrophy	23	4.5
07	Duane's Syndrome	20	3.89
08	Congenital glaucoma	17	3.30
09	Coloboma (uveal, retinal, lid)	15	2.91
10	Maculopathy	14	2.72
11	Albinism	13	2.33
12	Retinoblastoma	11	2.14
13	Ectopia lentis	09	1.75
14	Blepharophimosis	08	1.55
15	Dermoid Cyst	06	1.16
16	Double elevator palsy	06	1.16
17	Mesodermal dysgenesis	06	1.16
18	Presistent hyperplastic primary vitreous	06	1.16
19	Congenital retinal detachment	06	1.16
20	Other causes	43	8.37

The frequency of eye malformations were almost similar in both genders but optic atrophy, congenital glaucoma and coloboma were more in males.

Out of 514 patients, congenital lacrimal apparatus abnormalities were seen in 103(20%) children, with all but 2 having congenital nasolacrimal duct obstruction. Most (95) of these cases were between 0–2 years. In 70 patients the obstruction was unilateral (33 right eye, 37 left eye), while in 31cases it was bilateral.

Discussion

The present study on children with congenital eye anomalies showed that 98% of the congenital lacrimal apparatus abnormalities comprised of congenital nasolacrimal duct obstruction. The congenital defects of lacrimal apparatus are congenital absence of lacrimal gland, congenital fistula of lacrimal gland, atresia of the lacrimal punctum, atresia of the canaliculi, mucocele of the lacrimal sac but most common malformation is congenital blockage of nasolacrimal duct which may be complete or partial and is bilateral in 1/3 of cases.[6] Same frequency of bilateral blockage was seen in our study.

Another study on congenital malformations of the eyes reported that out of 109 eyes 38% had buphthalmos, 35% had cataract and 14% had nasolacrimal duct obstruction.[7] These figures are higher than our study except for nasolacrimal duct obstruction which was 20%. A Nigerian study reported common congenital defects of eyes as cataract (47.6%), congenital glaucoma (14.3%), nasolacrimal duct obstruction (10.5%) and corneal opacity (5.7%).[8] Another Nigerian study on 189 cases of congenital anomalies reported 31(16.4%) cases with congenital anomalies of eyes which, included congenital cataract (19%), micro ophthalmia (16.1%), nasolacrimal duct obstruction (12.9%) and congenital glaucoma (9.7%).[9] The Nigerian studies have similar frequency of cataract and nasolacrimal duct obstruction as seen in our study.

In Zaire the record of 1740 patients (1912 eyes) was reviewed from 1962-1992. Congenital eye malformations were seen in 2.2% which, comprised of congenital cataract (38%), congenital nasolacrimal duct obstruction (10%), congenital glaucoma (9%) and congenital ptosis (8%).[10] Our study has 22% frequency of congenital cataract and 20% for anomalies of nasolacrimal apparatus with 98% having nasolacrimal duct obstruction. In Turkey 11(19.1%) congenital anomalies of the eye were detected out of 57 patients having cleft lip or palate deformities. Out of eleven patients nasolacrimal obstruction was seen in 5 cases.[11] Another study reported congenital abnormalities of nasolacrimal apparatus in 12% patients with cleft lip and cleft palate.[12] Recent studies show that the incidence of nasolacrimal obstruction in children with Down syndrome is between 22-36%.[13,14]

A ten years (1990-2000) study showed that out of 130 patients with congenital abnormalities, 30.5% had congenital eye diseases. These included nasolacrimal duct obstruction (12.4%), cataract (5.1%), strabismus (2.9%) and buphthalmos (2.9%).[15] Case record analysis from 2001–2008 in two tertiary hospitals of Nigeria revealed that 50 children had congenital eye disorders with nasolacrimal duct obstruction as the commonest disorder seen in 20%.[16]

A study from Peshawar reported 38 eyes from 31 patients that had congenital nasolacrimal duct obstruction with a slight female preponderance. There was bilateral involvement in 7(22.5%) and unilateral involvement in 24(77.4%).[17]

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