



Prevalence of Amblyopia in Children with Congenital Ptosis

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Abstract: Objective: To evaluate amblyopia and its causes in a sample of Iraqi patients with congenital ptosis.

Methods: The study was conducted at the Ophthalmology Clinic of Ibn Al-Haytham Eye Teaching Hospital from May 2012 to February 2013. Only cases with true congenital ptosis were included. Uncooperative children were excluded. Patients underwent amblyopia assessment and a complete ophthalmic examination.

Results: Of 60 eyes out of 53 cases, amblyopia was found in 13 (21%). The causative factors for amblyopia were refractive errors: 8 eyes (61%), strabismus: 4 eyes (31%), and stimulus deprivation: 1 eye (8%). The incidence of amblyopia increases with increasing extraocular abnormalities.

Conclusion: Patients with congenital ptosis are at high risk for developing amblyopia. Therefore, regular screening is recommended from the onset of the disease.

Key words: Congenital Ptosis, Refractive Errors, Strabismus, Stimulus Deprivation, Extraocular Abnormalities, Astigmatism, Anisometropia, Refractive Amblyopia.

Introduction

Ptosis, or ptosis, is the drooping of the upper eyelid. It can be classified into two general categories: congenital or acquired. Congenital ptosis is a common problem in oculoplastic surgery [1,2,3]. By definition, it is present from birth or shortly thereafter and can be classified according to cause as muscular (most common), superficial, mechanical, and neurological. [4] 25% of cases are bilateral. [5,6,7] It is either simple (isolated) or associated with other disorders. Strabismus, or amblyopia, is often defined as decreased visual acuity with perfect refractive correction and the absence of any ocular or visual system abnormalities, so it is a diagnosis of exclusion. This strabismus begins in infants and young children and requires early diagnosis and treatment. Physicians divide strabismus into three subtypes based on the underlying or associated clinical conditions: [8,9,10] 1. Strabismus (most common) and 2. Refractive (less common), which can be divided into anisometropic, isotropic, and esotropic. 3. Deprivation (rare).



In congenital ptosis, these subtypes are more common, and refractive errors are the most common in most studies. Given this, and the fact that congenital ptosis may be complicated by other eye disorders, it is essential for all patients to undergo a comprehensive ophthalmic evaluation. [11]

Ptosis is a condition characterized by an abnormal lowering of the upper eyelid, which may cause partial or complete obstruction of the visual axis. It can be congenital or acquired, with congenital ptosis being the most common form in childhood. It is estimated to account for approximately 80% of pediatric cases and is typically caused by incomplete or altered development of the levator palpebrae muscle [12,13]. The remaining 20% is attributed to acquired ptosis, associated with factors such as trauma, neuromuscular diseases, or degenerative processes ([14,16]).

Although the global prevalence of ptosis in children has not been officially reported, in Latin America, 56.5% of cases are attributed to congenital ptosis and 43.5% to acquired forms (Gutiérrez-Mendoza, 2021). On the other hand, a population-based study conducted in Olmsted, Minnesota, by Gribbentrog et al. (2011) estimated that congenital ptosis affects approximately 1 in every 842 births, and that the most common type is simple congenital ptosis, characterized by isolated dysfunction of the levator palpebrae muscle without other associated systemic conditions [16].

Amblyopia is defined as decreased visual acuity without an apparent organic cause, attributed to impaired visual development. It is the most common cause of preventable visual impairment in childhood, affecting between 0.74% and 5.6% of the global population, depending on ethnicity [17,18]

In congenital ptosis, amblyopia may develop as a result of multiple factors beyond the simple loss of visual stimulation. Astigmatism and anisometropia may predispose to refractive amblyopia, and strabismus, which is often associated with amblyopia, also contributes to the development of strabismus. [19,20]

The purpose of this descriptive study was to evaluate amblyopia and its causative types in a sample of Iraqi patients.

Patients and Methods

Patients with congenital ptosis who attended the Eyelid Surgery Clinic at Ibn Al-Haytham Teaching Eye Hospital from May 2012 to February 2013 were included in the study. Ptosis was assessed using a 1-IRD scale, and its severity was defined as follows: +3 (mild), +2 (moderate), <+1 (severe). Both UCVA and BCVA were tested using a Snellen chart or equivalent finger cube. Uncooperative children were excluded. Cycloplegic refraction using cyclopentolate eye drops was performed on patients with UCVA <6/6. Amblyopia was defined as <6/12 BCVA. Etiological diagnostic criteria for amblyopia were established as follows: 1. Refractive: hyperopia > +1.0D, myopia > -3.0D, astigmatism > 1.0D. 2. Strabismus: Any marked astigmatism with or without refractive error. 3. SDA: 1-IRD < 0 (pupil block) after excluding both refractive and strabismus causes. 1. Examine the anterior and posterior segments of the eye using a slit lamp and condensing lens. Examine pupillary anisometropia and pupillary reflexes. Examine eye alignment and movement in all gaze positions using the cover test. 2. Examine all patients for the jaw wink sign. Isolated ptosis was referred to as "simple," while associated ptosis was referred to as "complex."

Results

Results Summary

- Total number of patients: 60
- Amblyopia cases: 13 patients
- Among the 60 patients, the condition was categorized as:
- Simple ptosis: 48 cases
- Out of these, 6 had amblyopia (12%)

- Complicated ptosis: 12 cases
- Out of these, 7 had amblyopia (58%)

Table 1: Distribution of the etiological types of the 13 amblyopic eyes within simple and complicated groups:

	Types of Amblyopia			Total
	Refractive	Strabismic	SDA	
Simple	6 (46%)	---	---	6 (46%)
Complicated*	2 (15%)	4 (31%)	1 (8%)	7 (54%)
Total	8 (61%)	4 (31%)	1 (8%)	13 (100%)

*2 BPES, 2 XT, 1 CFEOM(+XT), 1 MED(+HoT), 1 HA.

Table 2: comparison of the frequency of amblyopia in the simple and complicated groups:

	Total (N=60)	Amblyopia (N=13)	Amblyopia %
Simple	48	6	12
Complicated	12	7	58

P-value <0.001

"Table 3: Surgical Outcomes in Patients with Ptosis"

	Total (N=60)	Amblyopia (N=13)	Amblyopia %
Simple	48	6	12%
Complicated	12	7	58%

Discussion

In this study, lazy eye was found in 21% of eyes with congenital ptosis. Compared to the incidence and prevalence of lazy eye in the general population, this finding was statistically highly significant ($P < 0.001$). This finding is similar to the results of many other studies, but lower than some others.

The frequency of factors causing lazy eye in this study is also similar to that of most other studies. Refractive errors were found to be the most common cause of lazy eye (61%), with an increased frequency of astigmatism, which is expected and consistent with other studies due to the topographical changes in the cornea caused by ptosis. Strabismus (1) was the second most common condition (31%), and all four cases of strabismus were associated with refractive errors resulting from lazy eye. Refractive amblyopia (SDA) was the least common (8%), with only one case at 5 years of age. This patient had severe unilateral upper eyelid ptosis due to a capillary hemangioma,



with visual acuity of CF1m in the ptotic eye. She must have been examined earlier to correct her condition and initiate amblyopia treatment. C. All cases of amblyopia associated with congenital ptosis were related to one or more causes, while other studies found no clear cause for amblyopia in a minority of their cases. There is a significantly higher association with amblyopia in complicated cases compared to simple cases. The number of amblyopia cases also increases significantly with increasing ptosis severity [7]; this is consistent with the findings of Hornblase et al., but in contrast to the findings of Benesch et al.

Conclusion:

The association of amblyopia with congenital ptosis is highly statistically significant; this significance increases in complex types and with increasing ptosis severity. Therefore, a comprehensive ophthalmic evaluation with visual acuity testing for all cases of congenital ptosis early in life is crucial for detecting and treating amblyopia during the critical period of childhood.

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