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Original Article

Presentations and causes of blepharoptosis in Yazd, Iran

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Abstract

BACKGROUND: Drooping of the upper eyelid (blepharoptosis or ptosis) is not an uncommon ocular problem. The causes of ptosis could be myogenic, aponeurotic, mechanical or traumatic. Detailed assessments of the cause, degree of ptosis and levator functions help determine the most appropriate management and treatment. This study was carried out to investigate the causes and presentations of ptosis in patients in Yazd, Iran.

METHODS: Data from ptotic patients referred to the Eye Clinic of Shahid Rahnemoon Hospital were collected by questionnaires from September 2004 to September 2005 in a case series study.

RESULTS: In total, 90 patients (42 males, 48 females) were included in the study. The most frequent types of ptosis were myogenic in 37 cases (41.1%), aponeurotic in 32 (35.6%), neurogenic in 12 (13.3%) and mechanical in 9 (10%), in the order mentioned. Of a total of 90 cases, 50 (55.6%) were congenital and 40 (44.4%) were acquired. Overall, only one side was involved in 65 cases (72.2%), while 25 (27.8%) cases had bilateral involvement. The most frequent type of ptosis was aponeurotic in men (19 patients or 45.2%) and myogenic in women (22 patients or 45.8%).

CONCLUSIONS: Clinical aspects of ptosis were related to etiology. Our study showed that the most frequent type of ptosis was congenital myogenic type and its frequency was equal in both sexes.

KEY WORDS: Ptosis, myogenic, neurogenic, aponeurotic.

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Blepharoptosis is not an uncommon ocular problem and its most common cause was found to be congenital. Drooping of the upper eyelid may be minimal (1-2 mm), moderate (3-4 mm), or severe (>4mm) that covers the visual axis. Ptosis can affect one or both eyes and can be congenital or acquired [1]. The acquired type may occur after anterior segment surgery [2], post-cataract surgery [3,4], wearing contact lens [5], systemic disease [6,7], hemispheric strokes [8] and aging [9].

Ptosis in childhood may both impair normal visual development and be cosmetically disfiguring. Each patient must receive a thorough ocular examination, as well as careful assessment of the ptosis itself [10]. Based on the mechanisms causing ptosis, all cases can be classified into one or more of the following categories: 1) neurogenic, 2) myogenic, 3) aponeurotic, and 4) mechanical [11], but the commonly used classifications for ptosis do not have a unified concept [12]. This study was performed to evaluate the presentations and causes of ptosis cases in Yazd, Iran.

Methods

In this cross-sectional case series, data on 90 patients with ptosis referred to Shahid Rahnemoon Hospital were collected using questionnaires from September 2004 to September 2005. The questionnaire was designed based on literature review and obtained the following data: 1) personal characteristics, 2) accompanying conditions, e.g. high blood pressure, diabetes mellitus, allergic conjunctivitis, contact lens wearing, 3) side(s) of involvement, 4)

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family history of ptosis, 5) ptosis severity, 6) ptosis types including myogenic, neurogenic, aponeurotic and mechanical, based on being congenital or acquired, 7) extraocular muscle dysfunctions and 8) ptosis characteristics including ptosis degree, levator function, palpebral aperture and the position of upper lid crease.

Excluding criteria were chronic progressive external ophthalmoplegia, oculopharyngeal muscular dystrophy, myasthenia gravis, myotonic dystrophy, toxic myopathy, associated disease (such as orbital tumor, infection and dermatochalasis), orbital volume loss, hypotropia, blepharospasm, pseudoptosis, and Marcus-Gunn jaw winking syndrome.
Questionnaires were filled out by an ophthalmologist and the data were analyzed using SPSS.

Results

In total, 42 males and 48 females (90 patients) were included in this study. Patients were classified in three age groups, 0-14 years (33.3%), 15-49 years (57.7%) and >50 years (10%). Of 90 patients, 50 (55.6%) had congenital ptosis and the rest had acquired ptosis. Ptosis was myogenic in 37 cases (41.1%), aponeurotic in 32 (35.6%), neurogenic in 12 (13.3%) and mechanical in 9 (10%) (table 1). Associated systemic diseases including diabetes mellitus, high blood pressure, allergic conjunctivitis and cerebrovascular accident were seen in 10 (11.1%) cases. Four cases (4.4%) were contact lens wearers.

Table 1. Frequency of ptosis types.

Type of ptosis	Frequency	Percentage
Aponeurotic	32	35.6
Myogenic	37	41.1
Neurogenic	12	13.3
Mechanical	9	10
Total	90	100

Of 90 cases, 12 (13.3%) had mild ptosis, 53 (59.9%) had moderate ptosis, and 25 (27.8%) had severe ptosis. Overall, the right eye, the left eye, and both eyes had ptosis in 32 (35.6%), 33 (36.7%), and 25 (27.8%) cases, respectively. In this study, 19 cases (21.1%) had positive family history of ptosis. Family history was most frequently positive in myogenic-type patients (43.2%) while there was no positive family history in mechanical-type patients (table 2). In addition, 26 cases (28.8%) had extraocular muscle dysfunction (strabismus), which was more frequent in neurogenic (6 cases or 50%) and myogenic (9 patients or 24.3%) types (table 3).

Table 2. Frequency of positive family history based on ptosis types.

Type of ptosis	Frequency	Positive Family History	
		Frequency	Percentage
Aponeurotic	32	2	6.25
Myogenic	37	16	43.2
Neurogenic	12	1	8.3
Mechanical	9	0	0
Total	90	19	21.1

Table 3. Frequency of strabismus based on ptosis types.

Type of ptosis	Frequency	Strabismus	
		Frequency	Percentage
Aponeurotic	32	8	25
Myogenic	37	9	24.3
Neurogenic	12	6	50
Mechanical	9	3	33.3
Total	90	26	28.8

The most frequent type of ptosis in the 0-14, 15-49, and >50-year-old age groups was myogenic (22 cases or 73.3%), aponeurotic (22 cases or 43.1%) and aponeurotic (7 cases or 77.8%), respectively (figure 1).

The most frequent type of ptosis in men and women was aponeurotic (19 patients or 45.2%) and myogenic (22 cases or 45.8%), respectively (figure 2). The difference in ptosis types between male and female subjects was not statistically significant (P = 0.32).

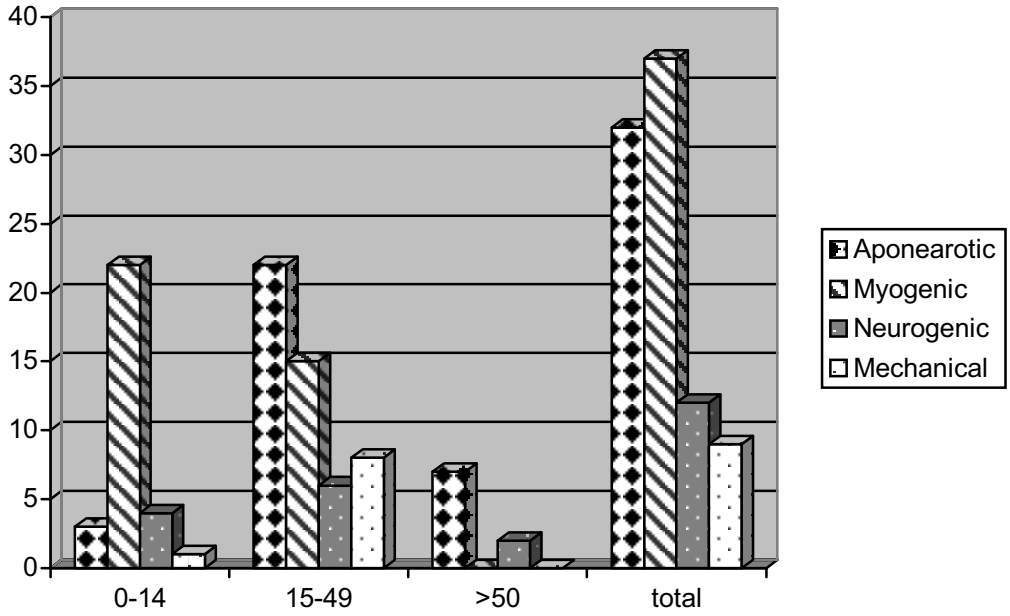

Figure 1. Frequency of ptosis types based on age groups.

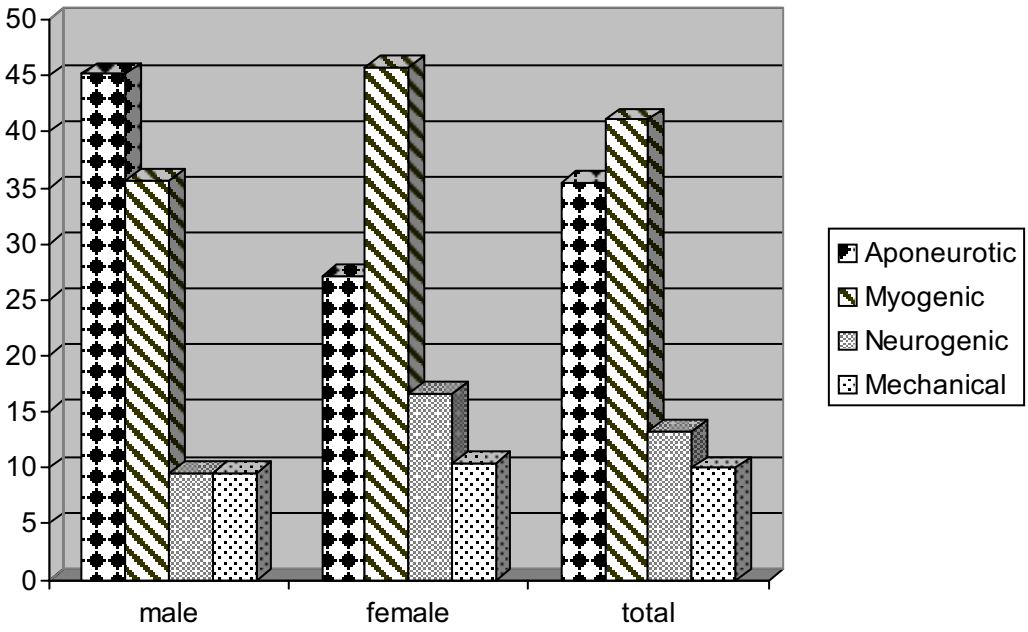

Figure 2. Frequency of ptosis types based on sex.

Discussion

Ptosis could be due to aponeurotic, myogenic, neurogenic and mechanical or traumatic causes. Patients with significant ptosis may tilt their head back into a chin-up position, lift their eyelids with finger, or raise their eyebrows [1]. Based on mechanisms that underlie ptosis, we classified our patients into 4 groups, namely aponeurotic, myogenic, neurogenic and mechanical. This was similar to Frueh classification [11] but had some differences from Mulvihill [10] and Baggio [13] classifications. Before

placing a patient in one or more of the four categories, a thorough history must be taken and an examination conducted. The cases of congenital ptosis were usually unilateral with severe ptosis and poor levator function. There were 65 (72.2%) unilateral and 25 (27.8%) bilateral cases of ptosis in our study; this was similar to studies of Sridharan [14] which showed bilateral ptosis in 39% and unilateral ptosis in 61% of cases, and Ducasse [12] with 73.8% unilateral and 26.2% bilateral ptosis.

The clinical presentation of ptosis is usually related to the etiology. Bilateral ptosis is most often observed in congenital forms, levator disinsertion or idiopathic cases. Males predominate in congenital ptosis and oculomotor palsy, while females in Horner syndrome [12]. In our study, males predominated in aponeurotic (45.2%) and myogenic (35.7%) types and females in myogenic (45.8%) cases. The most frequent and the least frequent types of ptosis were myogenic and mechanical, respectively. Kersten [15] studied 91 young adults with acquired ptosis and showed contact lens wearing to be the only identifiable cause in 47% of patients followed by trauma, accounting for 19%. In the Averbuch-Heller study [16], neurogenic ptosis was observed in 24 patients with stroke (37.5%), which was bilateral in 10 and unilateral in 14 cases, while none of the control subjects had neurogenic ptosis. In the survey by Baiyeroju and Oluwatosin [17] in Nigeria, the most common cause of ptosis was found to be congenital (56%).

Senile ptosis is not a disorder limited only to older age groups but is instead a cumulative process occurring throughout life, becoming obvious in later years [9]. In our study 9 cases (10%) were over 50. Siqueira [18] studied the eyelid alterations after the age of 50 in 325 cases. They presented dermatochalasis (96.5%), eyebrow ptosis (60.8%), orbital fat prolapse (50%) or eyelid ptosis (39.1%). The alterations were bilateral in 68.8% of the subjects.

Congenital ptosis is a muscular dystrophy demonstrated by various degrees of muscular degeneration and may rarely be associated with ocular and systemic congenital malformations [19]. In the study of Dray [20] there was a high incidence (6.9%) of amblyopia in patients with congenital ptosis which was similar to our study, with 6% amblyopia in 50 (55.6%) of all congenital ptosis cases.

Aponeurotic blepharoptosis is a postoperative complication of anterior segment surgery with a reported incidence of 1-2% and variable etiologies. Altieri [21] studied 163 patients and 6.7% of them had ptosis. In our study, three patients (3.3%) had ptosis after anterior segment surgery. Another postoperative complication is astigmatic changes induced by eyelid repositioning. This could be a cause of persistent blurred vision after upper eyelid procedures [22]. The mechanisms producing anophthalmic ptosis should be assessed carefully before surgical repair to achieve optimal aesthetic results. Kaltreider [23] observed no relation between the occurrence of trauma as a reason for enucleation and the occurrence of levator dehiscence. From 94 anophthalmic ptosis patients, 30% who had secondary intraconal or extraconal implants and no other surgical intervention for ptosis showed improvement in ptosis. In our study, 12 (12.2%) cases had anophthalmic ptosis, 8 of whom (78.8%) underwent surgery with relatively good aesthetic results.

Upper eyelid ptosis can present both functional and aesthetic problems. Since proper correction of ptosis can be difficult, numerous surgical procedures have thus far been developed [24]. We employed various surgical techniques based on the causes and types of ptosis in our patients. In contrast to patients with adult-onset ptosis resulting from aponeurosis dehiscence, adults' ptosis due to malignant infiltration of the upper orbital tissues may display hang-up of the upper eyelid in down gaze. In Uddin-Rose survey [25], all patients with down gaze hang-up had orbital malignancy. We excluded all cases of orbital malignancy.

In this study, 30 cases (33.3%) were less than 15 years old, 51 (56.7%) were between 15-49 years and 9 (10%) were more than 50 years old. There was a 1:1.14 male-to-female ratio and the majority (72.3%) had unilateral ptosis. In our

study, there were 26 cases (28.8%) of strabismus with ptosis, 50% of which had occurred in neurogenic ptosis similar to Dawson's study [26]. Overall, the results of this study showed that the most frequent type of ptosis was congenital myogenic and its frequency was equal in males and females.

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