ORIGINAL ARTICLE

Demographic Characteristics and Causes of Acquired Non-senile Ptosis: Experience at a Tertiary Oculoplastic Center

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ABSTRACT

Purpose: To determine the demographic characteristics and causes of acquired, non-senile ptosis in patients presenting to an oculoplastic clinic of a tertiary care centre.

Study Design: Observational case series.

Place and Duration of Study: Lady Reading Hospital, from January 2016 to December 2017.

Methods: Twenty eight patients were fulfilling the inclusion criteria were recruited in the study. Detailed history with complete examination and investigations like electromyography, acetylcholine receptor antibody test and CT/MRI brain were performed when required. Cause of each ptosis was determined and the relative proportions were calculated.

Results: There were 28 cases with acquired, non-senile ptosis. Fifty seven percent were males while females were 42.9%. Patients were divided into four age groups. Most of the patients were in age group of 42–62 years. Eyelid/orbit tumor and Chronic progressive external ophthalmoplegia (CPEO) was seen in **3.6%** and **7.1%** patients of < 20 years of age respectively. Myasthenia gravis and thyroid related pseudoptosis was common in patients of 21-41 years. In patients with age 42-62 years, Pseudoptosis due to thyroid disorder was the commonest. In patients with age more than 63 years, 3rd nerve palsy, eyelid/orbital mass and Myasthenia gravis was seen. Third nerve palsy and Pseudoptosis secondary to thyroid and eyelid/orbit mass were more common in males while Myasthenia gravis was more common in females. CPEO was equally seen in both genders with $p = 0.575$.

Conclusion: Thyroid related eyelid pseudoptosis of the contralateral eye was the commonest cause in this case series.

Key Words: Blepharoptosis, Third nerve palsy, Myasthenia gravis.

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INTRODUCTION

Ptosis is caused by a number of conditions. Some of which must be investigated thoroughly to identify the possible systemic cause and to prevent any life-threatening complication.[1] Generally Ptosis is divided into three diagnostic categories which include congenital, acquired and pseudo ptosis. Myogenic and Neurogenic are important causes of acquired ptosis.[2] Laterality is important in systemic cause of ptosis.

Bilateral involvement is seen in CPEO, congenital ptosis and senile Ptosis. Neurogenic ptosis is usually unilateral although bilateral involvement is also reported.[3] Pseudoptosis is a type which should be excluded after proper ptosis measurement. Hemifacial spasm, palpebral fissure narrowing, unilateral hypotropia, hypertropia on the contra lateral side, abnormally small globe, dermatochalasis and thyroid related eyelid retraction in contra lateral side are important causes of pseudoptosis.[4]

Apart from the clinical diagnosis of ptosis based on measurements like vertical fissure height, marginal reflex distance, crease height, and function of levator muscle, specific cause of Ptosis needs proper history and investigations along with systemic investigations. Imaging such as MRI of whole tract like oculomotor nerve is sometimes necessary to find any hidden cause of Ptosis like third nerve palsy.[5] Blepharoptosis in patients with Horner's syndrome, myasthenia, chronic progressive external ophthalmoplegia, myotonic dystrophy and acute neurovascular events need timely diagnosis and management.[6]

Rationale of this study was to determine the demographic features and causes of acquired non-senile ptosis in patients visiting an oculoplastic clinic of a tertiary care centre.

METHODS

A cross sectional observational study was carried out in Lady Reading Hospital, Peshawar, from January 2016 to December 2017. Informed consent was obtained from all patients or their guardians. This study was approved by the institutional review board. Patients with congenital and senile ptosis were excluded from the study. The cause of each ptosis was investigated after detailed history, examination, ptosis measurements and investigations including electromyography and acetylcholine receptor antibody test for myasthenia gravis and CT/MRI brain for cranial nerve palsy. Cause was determined in each ptosis and their relative proportions were calculated.

RESULTS

We observed 28 cases of ptosis fulfilling the inclusion criteria. Majority of the patients were male (57.1%) while females were 42.9%. Patients were divided into four age groups. Maximum number of ptosis patients were in the age group 42–62 years (13). Further details are shown in table 1. Causes of ptosis with specific age groups are shown in **Figure 1.** Ptosis caused by eyelid/orbit tumor and CPEO (Chronic progressive external ophthalmoplegia) was seen in patients < 20 years of age. Myasthenia gravis and pseudoptosis caused by thyroid related lid retraction was seen in patients of 21-41 years of age. In patients with age group 42-62 years, Pseudo ptosis due to thyroid disorder was the commonest followed by Myasthenia gravis. In patients with more than 63 years of age, 3rd nerve palsy, eyelid/orbital mass and Myasthenia gravis **(7.1%)** was were the causes of Ptosis.

Bar chart (figure 2) shows distribution of causes in male and female. 3rd nerve palsy, Pseudo ptosis secondary to thyroid and eyelid/ orbit mass were more common in males while Myasthenia gravis was more common in females. CPEO was seen equally seen in both genders with p value of 0.575.

Table 1: Demographic data of the study group. n= 28

Gender	
Males	57.1% (16)
Females	42.9% (12)
Age Groups	
0 – 20 years	10.7% (3)
21 – 41 years	14.3% (4)
42 – 62 years	46.4% (13)
> 63 years	28.6% (8)
Causes of Ptosis	
Pseudoptosis	32.1%
Myasthenia Gravis	28.6%
Eyelid/orbit mass	17.9%
Third nerve palsy	14.3%
CPEO	7.1%

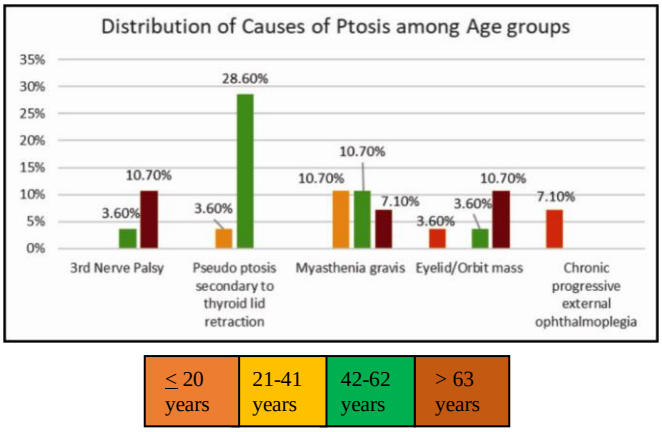

Fig. 1: Comparison of causes of Ptosis with Age Groups (n = 28).

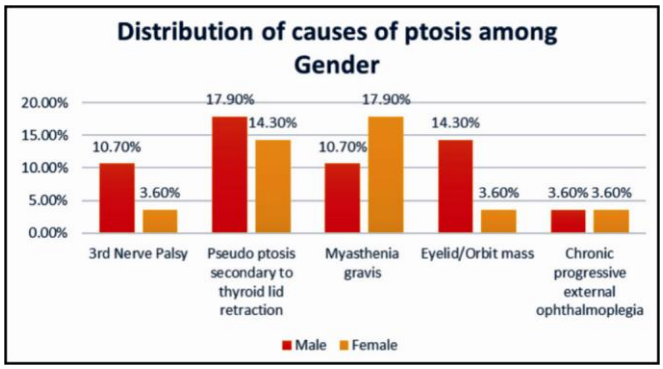

Fig. 2: Gender Comparison of causes of Ptosis (n = 28).

DISCUSSION

Blepharoptosis or simply ptosis is dropping of eyelids weather congenital or acquired. It is a cosmetic problem which needs surgical correction but the cause needs to be determined. Occasionally, ptosis may be the initial presenting clinical feature of a systemic disorder. Therefore, it is of great importance to know the causes of ptosis, its clinical presentation and the systemic evaluation that one must undergo before going into surgery.[7]

Serious systemic causes of ptosis include conditions related with muscles, nerves and blood. Myasthenia Gravis and thyroid disorders are autoimmune diseases, which are common in females.[8] In our study, myasthenia gravis was more common in females than males. Serious systemic causes of ptosis are seen in all age groups.[9]

In our study, we observed such causes in a range of ages from childhood to old age. Some oculoplastic conditions are serious and rare but important conditions warrant close examination. Pseudoptosis secondary to thyroid related lid retraction of the contralateral side also needs to be identified.[10] In our study this was the commonest type of ptosis. Retraction of upper eyelid is common (90%) in patients with thyroid eye disease (TED) even at initial stage. The contralateral normal eyelids may be mistakenly diagnosed as ptosis. Therefore, eyelid retraction may be early sign of pseudoptosis, most common sign of TED. This condition should be identified and treated accordingly.[11] Therefore, confirming a true Ptosis is important as it can give important clue to the cause of any systemic disorder. Auto immune disorders, degenerative conditions, hereditary diseases, eyelid tumors and infections need to be excluded before managing the actual ptosis.[12]

Ptosis is sometimes the first symptom of conditions like chronic progressive external ophthalmoplegia (CPEO) which is present in < 1% of ptosis patients.[13] CPEO is a mitochondrial disorder involving muscles which can present as slowly progressive bilateral ptosis and ocular motility weakness in which ptosis usually precedes the motility problem.[14,15] It needs to be diagnosed and managed properly. It is a rare disorder and in our study, it was seen in only two patients. Third cranial nerve palsy caused by tumor or intra cranial hemorrhage can be life-threatening. Such cases require urgent neuro-imaging.[16]

Myasthenia gravis is a considerably common systemic cause of ptosis. Fortunately majority of cases have stable symptoms but sometime patient can present in acute stage. In such condition, timely diagnosis and referral is life saving. Questions to ask and document in such patients include difficulty with breathing and eating .Frequently according to our experience, patients usually do not volunteer to give such information to ophthalmologists. These patients rather give typical history of ptosis variability throughout the day. In dangerous situations like myasthenic crisis, shortness of breath is the important presentation along with ptosis and it requires immediate initiation of intravenous corticosteroid treatment.[17]

All patients with ptosis should undergo careful examination especially eversion of upper eyelid for any abnormal mass, occult foreign bodies like lost contact lens, which can cause trauma to the conjunctiva and upper eyelid and can present as ptotic lid. Similarly, lymphoma should be suspected in old patient. Other Important causes of mechanical ptosis due to cicatricial conditions are inflammation, Stevens-Johnson syndrome, and ocular cicatricial pemphigoid.[18] The differential diagnosis of an increasing orbital mass at this age includes the rapidly growing, rhabdomyosarcoma.[19] Its timely diagnosis based on clinical examination and histopathology is necessary for proper treatment.[20] In our study, eyelid /orbit mass was seen in five patients. This stresses the importance of excluding any hidden tumor in cases of ptosis.

In the nutshell, ptosis is benign in majority of patients, but the attending oculoplastic surgeon should be vigilant to exclude any possible cause of life threatening cause of ptosis.

Limitation of this study was the small sample size and lack of data regarding the management of these patients. Further prospective studies with management and follow ups are needed to have a deep insight into these types of ptosis.

CONCLUSION

Any ptosis irrespective of age and gender should be properly investigated and examined to rule out any underlying serious systemic disease.

Ethical Approval

The study was approved by the Institutional review board/Ethical review board. **(Ref No. 2181)**

Conflict of Interest

Authors declared no conflict of interest.

REFERENCES

1. **Lee CC, Feng IJ, Lai HT, Huang SH, Kuo YR, Lai CS.** The Epidemiology and Clinical Features of Blepharoptosis in Taiwanese Population. Aesthetic Plast Surg. 2019; **43 (4):** 964-972. Doi: 10.1007/s00266-019-01344-2.
2. **Yadegari S.** Approach to a patient with blepharoptosis. Neurol Sci. 2016; **37 (10):** 1589-1596. Doi: 10.1007/s10072-016-2633-7.
3. **Kishi M, Kurihara T, Kinoshita M.** A case of bilateral ptosis associated with cerebral hemispheric lesions. JPN J Psychiatry Neurol. 1990; **44 (3):** 585–588,
4. **Edmonson BC, Wulc AE.** Ptosis evaluation and management. Otolaryngol Clin N Am. 2005; **38:** 921–946.
5. **Braungart S, Craigie RJ, Farrelly P, Losty PD.** Paediatric Horner's syndrome: is investigation for underlying malignancy always required? Arch Dis Child. 2019; **104 (10):** 984-987. Doi: 10.1136/archdischild-2019-317007.
6. **Grusha YO, Fisenko NV, Blinova IV.** Blepharoptosis: diagnostic tests. Vestn Oftalmol. 2016; **132 (3):** 61-65. Doi: 10.17116/oftalma2016132361-65.
7. **Ben Simon GJ, Huna-Baron R, Goldan O, Ben Cnaan R, Rosen N.** Ptosis--etiology, diagnosis and management. Harefuah. 2003; **142 (1):** 42-47.
8. **Desai MK, Brinton RD.** Autoimmune Disease in Women: Endocrine Transition and Risk Across the Lifespan. Front Endocrinol. 2019; **10:** 265. Doi: 10.3389/fendo.2019.00265.
9. **Díaz-Manera J, Luna S, Roig C.** Ocular ptosis: differential diagnosis and treatment. Curr Opin Neurol. 2018; **31 (5):** 618-627.
10. **Marenco M, Macchi I, Macchi I.** Clinical presentation and management of congenital ptosis. Clin Ophthalmol. 2017; **11:** 453–463.
11. **Young SM, Kim YD, Lang SS, Woo KI.** Transconjunctival Triamcinolone Injection for Upper Lid Retraction in Thyroid Eye Disease-A New Injection Method. Ophthalmic Plast Reconstr Surg. 2018; **34 (6):** 587-593. Doi: 10.1097/IOP.0000000000001120.
12. **Finsterer J.** Ptosis: causes, presentation, and management. Aesthetic Plast Surg. 2003; **27 (3):** 193-204. Doi: 10.1007/s00266-003-0127-5.
13. **Pfeiffer MJ.** Chronic Progressive External Ophthalmoplegia Ptosis: Problems with Diagnostics and Treatment. Klin Monbl Augenheilkd. 2018; **235 (1):** 31-33. Doi: 10.1055/s-0043-124370.
14. **Lee AG, Brazis PW.** Chronic progressive external ophthalmoplegia. Curr Neurol Neurosci Rep. 2002; **2 (5):** 413–417.
15. **McClelland C, Manousakis G, Lee MS.** Progressive External Ophthalmoplegia. Curr Neurol Neurosci Rep. 2016; **16 (6):** 53. Doi: 10.1007/s11910-016-0652-7.
16. **Radia M, Stahl M, Arunakirinathan M, Kadhim M.** Examination of a third nerve palsy. Br J Hosp Med. 2017; **78 (12):** C188-C192. Doi: 10.12968/hmed.2017.78.12.C188.
17. **Fazel M, Jedlowski PM.** Severe Myositis, Myocarditis, and Myasthenia Gravis with Elevated Anti-Striated Muscle Antibody following Single Dose of Ipilimumab-Nivolumab Therapy in a Patient with Metastatic Melanoma. Case Reports Immunol. 2019; **2019:** 2539493. Doi: 10.1155/2019/2539493.
18. **Lyon DB, Dortzbach RK.** Upper eyelid malpositions: acquired ptosis. In: Albert DM, Jakobiec FA, Azar DT, Gragoudas ES Eds. Principles and practice of ophthalmology. WB Saunders, Philadelphia. 2000: pp 3469–3475
19. American Academy of Ophthalmology. Rhabdomyosarcoma in a 4-year-old boy. Available at: https://www.aao.org/image/rhabdomyosarcoma-in-4yearold-boy-2
20. **Sarigül Sezenöz A, Karalezli A, Özkan Arat Y, Çoban G, Kiratli H, Terzi A.** Metastatic Embryonal Conjunctival Rhabdomyosarcoma in a 4-Year-Old Boy. Ophthalmic Plast Reconstr Surg. 2017; **33 (3S Suppl. 1):** S125-S127. Doi: 10.1097/IOP.0000000000000583.

Authors' Designation and Contribution

Mohammad Idris; Assistant Professor: *Concepts, Design, Literature search, Data acquisition, Data analysis, Manuscript preparation, Manuscript editing, Manuscript review.*

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