LASH PTOSIS AS A CHARACTERISTIC SIGN OF FLOPPY EYELID SYNDROME

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ABSTRACT

Aim: To find a correlation between the floppy eyelid syndrome and the clinical sign of lash ptosis and loss of eyelash parallelism and develop an algorithm for early diagnosis. Materials and methods: This is a prospective case-control study including 97 consecutive patients diagnosed with floppy eyelid and 81 healthy sex- and age-matched controls. The study was conducted in Professor Pashev Eye Hospital, Sofia between January 2011 and December 2012. The clinical sign of lash ptosis and loss of eyelash parallelism was investigated in two stages. The condition was graded using a specially designed algorithm. Results: Lash ptosis and loss of eyelash parallelism was documented in all 97 (100%) patients with floppy eyelid and only in 8 patients (9%) in the control group. Statistical analysis of the results showed a very strong association between this sign and the floppy eyelid syndrome (p < 0.0001), and a correlation between the degree of lash ptosis and stage of the disease (p < 0.001).

Conclusion: The clinical sign of lash ptosis and loss of eyelash parallelism is characteristic for the syndrome. Recognizing this sign during a routine eye examination can facilitate a timely diagnosis of the frequently overlooked and improperly treated disorder of floppy eyelid.

Key words: floppy eyelid, lash ptosis, loss of eyelash parallelism, vertical distraction test

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ПТОЗ РЕСНИЦ КАК ОТЛИЧИТЕЛЬНЫЙ ПРИЗНАК СИНДРОМА „БОЛТАЮЩЕЕСЯ ВЕКО“

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РЕЗЮМЕ

Цель: Изучить ассоциацию признака „птоз и неправильный ход ресниц” с синдромом „болтающееся веко“ (слишком свободное веко) и предложить алгоритм раннего диагностирования синдрома.

Материал и методы: Проспективно исследованы 97 пациентов с птозом и 81 пациент в качестве контрольной группы (по полу и возрасту соответствуют). Исследование проведено в СОБАЛ им. „акад. Пашева“ в период январь 2011 – декабрь 2012 г. Признак „птоз и неправильный ход ресниц“ исследован в двух степенях, а стадии определены по специально выработанному автором алгоритму. Результаты: Наличие птоза и неправильного хода ресниц доказано у всех 97 (100%) пациентов с „болтающимся веком“ и только у 8 (9%) пациентов контрольной группы. Проведенный статистический анализ установил очень сильную связь между признаком „птоз и неправильный ход ресниц“ и заболеванием „болтающееся веко“ (p < 0.0001), как и корреляцию между степенью птоза ресниц и степенью заболевания (p < 0.001).

Заключение: Птоз с неправильным ходом ресниц верхнего века очень характерен для синдрома „болтающееся веко“. Его обнаруживание в ходе регулярного глазного осмотра может способствовать раннему диагнозу этого до сих пор недооцененного и неправильно леченного заболевания.

Ключевые слова: „болтающееся веко“, птоз, неправильный ход ресницы, вертикальный тракционный тест

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INTRODUCTION

The syndrome of floppy eyelid, described in 1981 as a combination of easily everted, lax upper eyelid, papillary conjunctivitis, and chronic eye irritation, has been subject of numerous studies. Evidence has been found that the disease is associated with male gender, obesity and sleep apnea. Numerous ocular and systemic associations including the serious life-threatening condition of sleep apnea have been suggested. This disorder has been often demonstrated to go unrecognized due to some nonspecific signs of ocular inflammation that mimic chronic conjunctivitis or dry eye accompanied by blepharitis. As a result, patients may remain undiagnosed for a long period of time and therefore be improperly treated. Many methods have been proposed to assess the eyelid laxity, and several schemes for staging, yet there is still no universally accepted definition and staging algorithm of the syndrome. Upper eyelid lash ptosis with lack of eyelash parallelism, described by Langford, is a very common clinical sign in patients with floppy eyelid. This sign can help diagnose the syndrome very early.

AIM

The aim of the present study was to determine the prevalence of lash ptosis in patients with floppy eyelid syndrome and compare it with age- and sex-matched subjects without the disease. Another objective was to examine the association between the degree of lash ptosis (partial or total), and the stage of disease.

MATERIALS AND METHODS

The study included 97 study patients with newly diagnosed lax eyelids and 81 sex- and age-matched subjects without the disease (controls). All patients granted their consent to be included in the study. We examined and monitored both groups over a period of 2 years (January 2011 - December 2012). All study subjects underwent full ocular examination, including upper eyelid laxity assessment. A diagnosis of floppy eyelid was made in patients with positive upper eyelid vertical distraction test, easily everted eyelids and papillary conjunctivitis affecting the tarsal conjunctiva. Staging of the disease was made using an algorithm we specially developed for the study (Fig. 1).

We performed vertical distraction test of the upper eyelid to measure eyelid laxity as described by McNab. Readings above 11 mm were considered as positive.

The severity of the disease was assessed according to the modified variant of Chambe’s classification as follows:

- Grade I = eyelid hyperlaxity (not floppy eyelid) - positive vertical traction test of the upper eyelid without papillary conjunctivitis;
- Grade II = asymptomatic floppy eyelid - positive vertical traction test of the upper eyelid, easy lid eversion, papillary conjunctivitis;
- Grade III = symptomatic floppy eyelid - positive vertical traction test of the upper eyelid, easy lid eversion, visible without eyelid eversion, papillae on the tarsal conjunctiva, conjunctival hyperemia;
- Grade IV = all of the signs of grade III plus persistent lid eversion.

We defined the sign of lash ptosis and loss of eyelash parallelism in two grades: partial - in the lateral ½ of the upper eyelid and complete – along the entire upper eyelid.

STATISTICAL ANALYSIS

SPSS-20 was used in the statistical analysis. The Kolmogorov-Smirnov test was used to find the frequency distribution type of numerical variables. The frequency distribution for the variable age was different from normal, and to test the null hypothesis when comparing this variable we used
nonparametric methods for statistical analysis. To assess the relationship between two categorical variables such as grade of disease and a clinical sign (eyelash ptosis) we applied the $\chi^2$ test. A $p < 0.05$ was considered significant and $p \leq 0.01$ as highly significant.

**RESULTS**

Demographic data of the two groups of patients are presented in Table 1 and Figs 2 and 3.

The figures show clearly that age distribution of both groups differs from the normal, which was the reason we used here non-parametric methods for statistical analysis.

The largest group was that of patients with grade II of the disease (asymptomatic floppy eyelid), which includes all signs of floppy eyelid, but tarsal papillae are not visible without lid eversion. The only patient with grade IV floppy eyelid (persistent lid eversion) was not included in the statistical

**Table 1.** Demographic data of all study subjects

<table>
<thead>
<tr>
<th></th>
<th>Study patients</th>
<th>Controls</th>
<th>t</th>
<th>P t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male n (% ± Sp)</td>
<td>82 (84.50 ± 1.32)</td>
<td>74 (91.40 ± 1.707)</td>
<td>0.854</td>
<td>0.01</td>
</tr>
<tr>
<td>Female n (% ± Sp)</td>
<td>15 (15.50 ± 2.706)</td>
<td>7 (8.60 ± 4.394)</td>
<td>1.794</td>
<td>0.85</td>
</tr>
<tr>
<td>Age yrs (mean ± SEM)</td>
<td>53.93 ± 1.243</td>
<td>50.78 ± 1.601</td>
<td>1.577</td>
<td>0.02</td>
</tr>
<tr>
<td>Total</td>
<td>97 (100.00)</td>
<td>81 (100.00)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
analysis. We found unilateral involvement in 36 patients (37.11%), and bilateral - in 61 (62.89%). There was no significant difference between symmetry of involvement and severity of disease (p = 0.852, \( \chi^2 = 0.788 \)).

Lash ptosis with loss of eyelash parallelism was found in all patients with floppy eyelids (100%). In the control group we documented this sign in only 9 patients (11%). The distribution of study patients with lash ptosis is presented in Table 2.

We found a strong statistical link between this sign and grade of the disease (\( \chi^2 = 53.177, p < 0.0001 \)).

To find if there is a relation between the grade of disease and degree of lash ptosis we used the Kruskal-Wallis test. We formulated the null hypothesis as: “There is no relation between total ptosis of the eyelashes and the degree of floppy eyelid”. The results of analysis were: “there is a statistically significant relation between total eyelash ptosis and degree of the disease (\( \chi^2 = 27.393, p < 0.0001 \))”

We therefore proved that the more marked the clinical sign of lash ptosis and lack of eyelash parallelism is the stronger the positive correlation with the advanced stages of floppy eyelid syndrome.

DISCUSSION

Late diagnosis of the condition is a problem acknowledged by most researchers of the floppy eyelid syndrome. Because of non-specific complaints, patients with floppy eyelid remain undiagnosed or inadequately treated for a long period of time. So far some issues about the definition and staging of the syndrome remain unclear. Most researchers believe that easy lid eversion is the main sign of the disease.

In this study we applied specially developed algorithm for the diagnosis and staging of floppy eyelid (Fig. 1). It is based on measuring the palpebral laxity by applying the vertical traction test on the upper eyelid. The staging is similar to the scheme proposed by Chambe. To establish the diagnosis “floppy eyelid” mandatory for diagnosis lax eyelid was the sign papillary conjunctivitis, which can easily be found by application of vertical traction of the upper eyelid. In our scheme differentiating asymptomatic from symptomatic stage sign was the presence of papillae on the tarsal conjunctiva, visible without fully evertin the eyelid. We believe that in the symptomatic stage the upper eyelid is sufficiently loose to induce eyelid-bulb apposition and therefore leads to changes in the ocular surface and onset of symptoms.

We found that most of the study patients (56%) are in the second stage of the disease (asymptomatic floppy eyelid). This result can be attributed to the possibility of earlier diagnosis because of the focused attention of the ophthalmologist, as well as to the application of the vertical distraction test in all patients with lash ptosis. This approach allows us to detect disease in asymptomatic patients and demonstrates the advantage of the proposed method.

The clinical sign of lash ptosis with loss of eyelash parallelism helped us make a timely diagnosis of the syndrome. It is described in patients with congenital blepharoptosis, leprosy, and treatment with latanoprost. In the floppy eyelid publications it is referred to as a co-sign. Langford describes it as a physical feature of the syndrome.

We detected this clinical sign in all patients with floppy eyelids and found high statistically significant difference between study patients and controls by this sign. Similarly, we found a statistically significant correlation between the severity of disease and the degree of lash ptosis and loss of eyelash parallelism.

Table 2. Distribution of study patients - sign lash ptosis

<table>
<thead>
<tr>
<th>Sign</th>
<th>Grade</th>
<th>Number / percent</th>
<th>Controls</th>
<th>Study patients</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lash ptosis</td>
<td>0</td>
<td>Count 72</td>
<td>% ± Sp 40.40 ± 3.67</td>
<td>% ± Sp 19.10 ± 2.94</td>
<td>Count 40.40 ± 3.67</td>
</tr>
<tr>
<td></td>
<td></td>
<td>% ± Sp 5.10 ± 1.64</td>
<td>% ± Sp 34.80 ± 3.57</td>
<td>% ± Sp 39.90 ± 3.67</td>
<td>% ± Sp 34.80 ± 3.57</td>
</tr>
<tr>
<td></td>
<td>I</td>
<td>Count -</td>
<td>% ± Sp -0.60 ± 0.57</td>
<td>% ± Sp 0.60 ± 0.57</td>
<td>% ± Sp -0.60 ± 0.57</td>
</tr>
<tr>
<td></td>
<td>II</td>
<td>% ± Sp -</td>
<td>% ± Sp 0.60 ± 0.57</td>
<td>% ± Sp 0.60 ± 0.57</td>
<td>% ± Sp 0.60 ± 0.57</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Count 81</td>
<td>% ± Sp 45.50 ± 7.32</td>
<td>% ± Sp 54.50 ± 7.32</td>
<td>% ± Sp 100.00</td>
</tr>
</tbody>
</table>
CONCLUSIONS

The results we had suggest that the sign of lash ptosis with loss of eyelash parallelism is pathognomonic for the condition of floppy eyelid. Detection of the sign can indicate that more tests should be used in order to make a timely diagnosis.

REFERENCES