Evaluation of ocular trauma related to falling in elderly patients

Avaliação dos traumas oculares relacionados à queda da própria altura em idosos

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Study conducted at the Emergency Unit of Policlínica de Botafogo.

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INTRODUCTION

Falls from standing height are an event requiring a lot of attention due to the risk of severe injuries in different parts of the human body. The elderly should be assessed under specific aspects, and it is due to various risk factors inherent to their physical conditions and environmental factors. Among the parts of the body affected in this type of trauma is the face, in which ocular trauma is included.

It is estimated that the cost of injuries related to falls in individuals over 65 years in the US were US $12.6 billion. This amount increased significantly with the increase of hospital costs and expansion of the geriatric population. The incidence of falls increases with age and varies according to the lifestyle. About 30 to 40% of people over 65 years suffer one fall every year, reaching 50% of those aged 80 years or more.

Falls are equally common in men and women, yet there is a greater tendency for injuries in women. About 60% of those with history of falls will suffer it again the following year.

Approximately 5% of falls in elderly will result in hospitalization.

METHODS

In the emergency sector of the Ophthalmology Service at the Polyclinic of Botafogo a study was conducted on a series of cases in which 52 cases of ocular trauma arising from falling from standing height were assessed in people aged 60 years and older during the period from January 2012 to December 2014.

The frequency was compared between male and female victims, and ocular manifestations were assessed as for the need for hospitalization for reconstructive surgery and permanent sequelae in vision.

Surgical need is understood from eyebrow suture to eviscerated eyeball, and visual sequelae is any level of reduced visual acuity.

The number of cases in which surgery was necessary and visual sequelae were developed was also assessed.

RESULTS

A significantly higher prevalence of cases in women than in men was found, being 33 and 19, respectively. That is, about 63.5% of women and 36.5% of men of the amount assessed, represented in Figure 1.

Nine hospitalizations were necessary, being all of them surgical and with visual sequelae, as shown in figure 2.

Figure 2: Comparison between the frequency of sequelae in surgical and non-surgical cases.

There were visual sequelae in 11 cases of fall from standing height, in which 5 were men and 6 were women, represented in Figure 3.

Figure 3: Percentage of sequelae among the cases in men and women.

Of the 52 cases, in 18 surgical measures were necessary, being 8 in men and 10 in women, half of the cases resulting in visual sequelae, as observed in Figure 4.

Figure 4: Percentage of sequelae among surgical patients.

In 30.3% of ocular trauma cases in fall from standing height that occurred in women surgery was necessary, whereas in men this percentage was 42.1%, illustrated in Figure 5.

Figure 5: Comparison between the percentage of surgical need in men and women.
In 26.3% of cases that occurred in male people there was visual sequelae; in women this percentage was 18.1%, represented in Figure 6.

Figure 6: Comparison between the percentage of visual sequelae in men and women.

The severity of cases varied greatly, being very frequent the periorbital hematoma and the conjunctival haemorrhage. The frequency of corneal laceration and orbital fractures called our attention, as it can be seen in Table 1.

Table 1
Frequency by diagnosis made

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periorbital hematoma</td>
<td>33</td>
</tr>
<tr>
<td>Conjunctival hemorrhage</td>
<td>14</td>
</tr>
<tr>
<td>Corneal laceration</td>
<td>6</td>
</tr>
<tr>
<td>Orbital fracture</td>
<td>5</td>
</tr>
<tr>
<td>Eyebrow laceration</td>
<td>5</td>
</tr>
<tr>
<td>Eyelid laceration</td>
<td>3</td>
</tr>
<tr>
<td>Herniated iris</td>
<td>3</td>
</tr>
<tr>
<td>Laceration of conjunctiva</td>
<td>3</td>
</tr>
<tr>
<td>Hyphema</td>
<td>2</td>
</tr>
<tr>
<td>Without changes</td>
<td>2</td>
</tr>
<tr>
<td>Retinal detachment</td>
<td>2</td>
</tr>
<tr>
<td>Choroid detachment</td>
<td>2</td>
</tr>
<tr>
<td>Hypertensive uveitis</td>
<td>1</td>
</tr>
<tr>
<td>Laceration of sclera</td>
<td>1</td>
</tr>
<tr>
<td>Choroidal rupture</td>
<td>1</td>
</tr>
<tr>
<td>Retinal hemorrhage</td>
<td>1</td>
</tr>
<tr>
<td>Subgaleal hematoma</td>
<td>1</td>
</tr>
<tr>
<td>Vitreous hemorrhage</td>
<td>1</td>
</tr>
</tbody>
</table>

* The same patient may have more than one diagnosis.

Discussion

The present study showed that the prevalence of cases of emergency care due to fall from standing height in women is greater than in men. Such result is according to the CDC study of 2001.

In contrast to the result of the Guideline for the prevention of falls in the elderly of 2001 of the American Geriatrics Society, the British Geriatrics Society and a panel of prevention of falls of the American Academy of Orthopedic Surgeons, which accounted for only 5% of hospitalization due to falls in elderly, the present study examined a percentage of 17.3% hospitalizations. This fact proves that when there is eye trauma in falls from standing height in elderly, morbidity increases exponentially.

Other data obtained from this study is the fact that the cases assessed of ocular trauma from fall from standing height in men have more severe consequences than in women, since in 42.1% of cases in men hospitalization with subsequent reconstructive surgery was required, whereas in women this percentage was 30.3%. In this sense, the percentage of sequelae was also higher in the case of men, reaching 26.3% in contrast to 18.1% in women.

One should pay attention to the possibility that men and women have similar prevalence of falls, but women seek more care than men, who end up doing it only in cases of greater severity. This way, it would explain the fact that the results of the study show the cases of fall from standing height in men resulting in more hospitalizations, surgeries and visual sequelae than in women.

Of the 18 surgical cases, half got some visual sequelae, a number that expresses the complexity of the surgery from this type of trauma.

Of the cases in which there were sequelae, 100% underwent hospitalization.

As an addendum to this discussion there are two extremely important issues regarding falls in the elderly:

1. Risk factors:

   When addressing an issue as falls in the elderly, it is important to address the risk factors for such events, given the severity of injuries that can occur and the possibility of intervention to reduce the prevalence of trauma.

   Different risk factors are found in different studies due to the multifactorial nature of falls. The biggest risk factors identified are: gait/balance, medication, orthostatic hypotension, visual and cognitive impairments. Impaired gait and balance, followed by medication, were the most relevant risk factors.

   The place of fall, whether indoors or outdoors, must also be considered in the identification of risk factors. Studies have suggested that indoor falls tend to happen to more fragile people, and outdoor falls tend to happen in younger and more active people. This way, strategic measures for preventing falls are different according to the place of the fall.

   Even if some falls happen to individuals with no risk factors, the risk for falling increases according to the amount of risk factors.

   It is estimated that the risk for falls is even bigger in patients newly hospitalized having other risk factors for falling.

   1) Postural control - the clinical measures to prevent falls in elderly require knowledge of age-related changes that affect the postural control and increase the risk for falls.

   ◆ Sensory systems: the ability to maintain upright position relies on sensory capabilities of different systems, including the visual, vestibular and proprioceptive ones. Declines in the three systems mentioned naturally happen with aging.

   • Visual difficulties result from decreased visual acuity, depth perception, sensitivity to contrast and adaptation to darkness. The use of multifocal lenses also increase the risk for falls.

   • The loss of proprioceptive sensitivity happens in the lower extremities and allows an increased risk for falls.

   • The vestibular system is reduced by the loss of labyrinthine ciliary cells, vestibular ganglion cells and nerve fibers.

   • Hearing loss is also associated to increased risk for falls, but it is uncertain if this is a concurrent vestibular dysfunction or an independent risk factor for falls.
9) Environmental factors - they often interact with the intrinsic risk factors, thus their relative importance to falls is clearly estimated.

Anyway, attention to home safety measures are recommended. Falls in hospitals or nursing homes happen more frequently and are associated to higher morbidity than falls in the community.\(^{7}\)

Men and women over 65 years with low serum dosage of 25-hydroxyvitamin D have a higher risk for loss of strength and muscle mass.\(^{8}\) Serum concentrations below 20 mg/ml are also associated to poorer physical performance and performance decline in male and female elderly.\(^ {9}\)

II. “Fear of falling”:

The fear of falling, also called post fall anxiety syndrome, is a syndrome recognized in elderly. In a study conducted with a sample of more than a thousand women between 70 and 85 years of age, the fear of falling, determined by questionnaire, was found in at least one third of women and affected 46% of this sample in the subsequent 3 years.\(^ {10}\)

In another study with 673 elderly, 60% reported moderate restriction of activities, and 15% significant restriction of activities due to the fear of falling.\(^ {11}\)

The fear of falling was associated to: living alone; cognitive, balance and mobility impairment; depression; and previous history of falls.\(^ {12,13}\)

CONCLUSION

Eye injuries from falls from standing height are important not only for its severity, but also due to obtaining preventive measures from the knowledge of their risk factors.

After analyzing the data collected, this study allowed the assessment of a higher prevalence of attendances from fall from standing height in women compared to men. And in the latter, the severity of cases was reasonably higher.

Ophthalmologists should be aware of these risk factors so that they can identify the cause of the fall and guide the patient and their family for prevention.

REFERENCES


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