Prevalence of blepharitis in adult patients in Bogotá, Colombia

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Abstract

Introduction: Blepharitis is defined as a chronic inflammation of the eyelid margin and is a common cause of eye irritation. Its chronic nature, multiple etiologies and coexistence with ocular surface diseases makes its management a challenge. Although blepharitis is considered a common condition in our population, there is not enough information reported in the literature about its epidemiology or the frequency of the risk factors associated.

Aims and Objectives: This cross-sectional descriptive study was performed in Bogotá, Colombia, and it was designed to identify blepharitis prevalence, and frequency of subtypes.

Results: Blepharitis diagnosis was made in 68% (n = 215) of the patients, of whom 12.6% (n = 27) presented anterior blepharitis, 31.6% (n = 68) marginal blepharitis and 55.8% (n = 120) posterior blepharitis. Conclusions: We believe that blepharitis is an underdiagnosed condition in our country and may be different than that in other regions. We consider important to establish the real prevalence in our population to raise awareness, encourage early diagnosis, establish a foundation for new studies that allow us to identify and stablish risk factors and, of course, to evaluate therapeutic alternatives. The strategy to improve the rate of diagnosis of blepharitis would be through the education of the visual health professional in identifying the characteristic symptoms and signs of any type of blepharitis in order to be able to make an accurate classification and treatment.

INTRODUCTION

Blepharitis is a chronic inflammation of the eyelid margin and a common cause of eye irritation. This condition can cause a variety of symptoms including ocular and palpebral pruritus, conjunctival hyperemia, and tearing. It is closely related to dry eye disease. Its chronic nature, multiple etiologies, and coexistence with ocular surface diseases make its management a challenge.[1]

Background/rationale

Blepharitis etiology and pathophysiology depend on the anatomical location affected, thus classified as anterior, posterior, or marginal blepharitis.[1] Anterior blepharitis is characterized by affection of the skin of the eyelid margin, the base of the eyelashes, and hair follicles and is subclassified as staphylococcal, seborrheic, and demodectic.[2] Meibomian gland dysfunction (MGD) is defined as a chronic diffuse alteration of the meibomian glands that lead to obstruction of the meibomian glands or changes in the quantity or quality of secretion. If MGD is associated with inflammatory symptoms affecting the posterior lid margin, then it is considered posterior blepharitis.[3] Marginal blepharitis is when signs of anterior and posterior blepharitis overlap.[4] Blepharitis diagnosis is based on history, symptoms, and evaluation after a slit-lamp examination. Early detection and management could lessen or prevent structural damage.[1]

Objectives

Although blepharitis is considered a common condition in our country, there is not enough information about its prevalence or risk factors associated. We believe that blepharitis is an underdiagnosed condition in our community and may be different from that in other regions. The objective of this study is to determine the prevalence of blepharitis, frequency of subtypes, and symptoms in adult patients attending consultation at Fundación Oftalmológica Nacional, Bogotá, Colombia.

METHODS

Study design and setting

This cross-sectional descriptive study was performed in Bogotá, Colombia, and conducted in Fundación Oftalmológica Nacional, an ophthalmology center, which evaluates patients of any level of complexity from the center and South regions of Colombia. It was designed to identify blepharitis prevalence, subtype frequency, and symptoms.

Participants

A random sample of medical records of adult patients who went for routine eye examinations at Fundación Oftalmológica Nacional with ophthalmologists and other

eye care subspecialists between July and October 2021, was evaluated. Randomization was made with a website randomization tool (https://echaloasuerte.com/ number). Participants were excluded from the study if their medical record was incomplete or if it indicated prior ocular palpebral trauma, blepharoplasty, or any congenital palpebral alteration. Participants were neither paid nor assisted to attend the evaluation.

Study size

A total of 4000 patients went to an appointment at Fundación Oftalmológica Nacional between July and October of 2021. Considering heterogeneity (67%), the margin of error (5%), and the level of confidence (95%), a final sample of 314 medical records was considered. The sample was divided by age groups as follows: 18–29 years, 30–39 years, 40–49 years, 50–59 years, 60–69 years, 70–79 years, and 80 years and older.

Data collection

The following variables were collected from patients' medical records: basic demographic data, previous diagnosis of blepharitis, symptoms (including redness, tearing, and itching), examination of the eye and adnexa (including erythema, telangiectasia, trichiasis, irregularity in lid margins, abnormal deposits at the base of the eyelashes, and ulceration), and alterations of meibomian secretions (no alteration: fluid and transparent discharge, mild alteration: thick and slightly cloudy discharge and slight difficulty in expression, moderate: opaque, dense tending to be solid discharge, and with greater difficulty for expression, and severe: absence of secretion even with forced expression maneuvers). The diagnosis of blepharitis was based on ocular signs and symptoms and then subclassified in anterior, posterior, or marginal, according to the anatomical location involved. A database was filled out identifying positive signs and symptoms from medical records.

Ethical considerations

The study complied with the Declaration of Helsinki and was reviewed and approved by the Fundación Oftalmológica Nacional Ethics Committee. All registered data were anonymized, and only the principal investigators had access to complete patient information.

Statistical methods

Sample size, prevalence of blepharitis, frequency of anterior, posterior, and marginal blepharitis, and frequency of symptoms were calculated in Epidat 3.1. The statistical analysis was performed in the SPSS Statistics V21.0 program (CALA analitis by informese, Bogotá, Colombia). The distribution of continuous qualitative variables was evaluated using the Kolmogorov–Smirnov; the variables that showed normal distribution were described as average and in range, and the qualitative variables were described as percentages.

RESULTS

Three hundred and fourteen medical records were evaluated, with a mean age of 59 years (Interquartile range (IQR) 31), 60% (n = 191) women and 88% (n = 279) living in Bogotá. Demographic data are summarized in Table 1. Sixty-eight percent (n = 215) of the patients were diagnosed with blepharitis, 12.6% (n = 27) with anterior blepharitis, 31.6% (n = 68) with marginal blepharitis, and 55.8% (n = 120) with posterior blepharitis. Of all the patients diagnosed with blepharitis, 69.7% (n = 150) had no previous diagnosis. 41.9% (n = 90) were men and 58.1% (n = 125) were women. Analyzing the sample by age groups, the prevalence of blepharitis shows a bimodal pattern, being more frequent between ages 40 and 49 and between 70 and 79 years old. However, it is also evident that posterior blepharitis is more common in young people and anterior blepharitis increases in frequency as age increases [Figure 1].

Thirty-nine percent (n = 123) of the patients were symptomatic, with the most prevalent symptom being red eyes, present in 65.8% (n = 81) of all patients (n = 123), palpebral pruritus in 52% (n = 64), tearing in 46.3% (n = 57), and erythema of the lid margin in 16.2% (n = 20). The most frequent clinical findings in patients with blepharitis were thickening of the lid margin in 84.6% (n = 182), dysfunction of meibomian glands in 84.1% (n = 181), telangiectasias at the palpebral edge in 55.3% (n = 119), peeling in eyelash roots in 36.2% (n = 78), and distichiasis in 3.2% (n = 7).

Regarding MGD, a diagnosis was made in 59.8% (n = 188) of the patients (CI: 43.2% – 56.2%), of which 40.9% (n = 77) were men and 59.1% (n = 111) women. 62.5% (n = 113) had mild posterior blepharitis, 6.6% (n = 12) moderate posterior blepharitis, and 30.9% (n = 56) severe blepharitis. If the sample is divided by age groups, the prevalence

of MGD also shows a bimodal pattern between ages 40 and 49 and those over 80, with a higher prevalence of severely altered expressibility and secretion quality in older adults [Figure 2].

DISCUSSION

Blepharitis is a condition frequently found in the general population. In this study, the prevalence of blepharitis in adult patients that consulted with eye care specialists at the Fundación Oftalmológica Nacional between July and October 2021 was 68%. The most frequent type was posterior blepharitis in 55.8% of patients, followed by marginal blepharitis in 31.6%, and anterior blepharitis in 12.6%. An American study published in 2009 that recollected data through a telephone survey from 5000 people, reported that 79.3% of adults had at least one symptom of blepharitis. The survey also asked 120 ophthalmologists and 84 optometrists about the frequency of patients with blepharitis in their clinical practice. For ophthalmologists, the answer was 37%, and for optometrists, the answer was 47%.[5] Probably, the prevalence of blepharitis reported here was influenced by the fact that blepharitis symptoms overlap with other ocular conditions. However, the fact that visual health professionals believed that only 37% of their patients had some degree of blepharitis shows the lack of attention blepharitis is given by eye care professionals. Furthermore, a study done in South Korea in 2013, with patients diagnosed with blepharitis, according to the Korean Classification of Diseases

in their National Health System, found a prevalence of 1.1% per 100 people/year.[6] The dramatic difference between both values of prevalence shows an evident high rate of blepharitis underdiagnosis.

On the other hand, dry eye disease studies also assess the prevalence of blepharitis: Schein et al. reported a frequency of 3.4% of blepharitis and 3.5% of meibomian gland dysfunction (MGD) in diagnosed dry eye patients,[7] and Jie et al. reported that 68% of asymptomatic and 69% of symptomatic participants had telangiectasias at the palpebral border.[8] Furthermore, in Mexico, Rodriguez-Garcia, studied the risk factor for the ocular surface in patients with dry eye and found only a prevalence of 17% of chronic blepharitis.[9] This shows that dry eye and blepharitis are not always related and can exist without the other. However, it is well known that blepharitis can cause secondary dry eye as well as irreversible damage to the ocular surface.

As we previously stated, one of our concerns was the difficulty in diagnosing blepharitis and this was evidenced by the high rate of underdiagnosis (69.7%) found in our study. The considerable overlapping of symptoms and signs with other pathologies, such as dry eye or allergic conjunctivitis, leads to confusion when establishing a primary diagnosis. This overlapping of symptoms ultimately masks blepharitis as the underlying pathology leaving it untreated, while treatment focuses solely on allergic and dry eye symptoms.

To our knowledge, there are few studies of the prevalence of blepharitis in Latin America. There are two articles, one from Chile and other from Colombia that aim to find the prevalence of Demodex in college volunteers and patients attending general ophthalmological consultation. In these articles, they report a prevalence of anterior blepharitis due to Demodex, 74.1% of people infected with Demodex and 38.3% of all patients, respectively.[10,11] It is worth recognized that both articles are only considering the prevalence of anterior blepharitis since they are not seeking for other types of blepharitis. In Chile, López-Ponce et al. determined prevalence of Demodex folliculorum among patients already diagnosed with blepharitis, finding 83.7% of patients were infested with the parasite.[12] It is expected that in the population of patients diagnosed with blepharitis, there should be a higher prevalence of Demodex infestation. In Pereira Colombia, Betancurt García et al. evaluated 40 blepharitis diagnosed patients and found that 92.5% of them had xanthelasma, 82.5% had pruritus and burning, 82% had conjunctival infection, and 80% had collar scales. The most frequently found isolated microorganism in palpebral border samples was staphylococcus epidermidis, in 87.9% of the patients.[13] Finally, in Natal, Brazil, Garcia et. al. determine the prevalence of ocular findings of the external structures in schoolchildren, finding only a prevalence of 3.5% of blepharitis.[14] The difference in prevalence with our study is to be expected since, classically, a lower prevalence of blepharitis has been described in infants. There is a clear need for prevalence studies of anterior, marginal, and posterior blepharitis in the region to help us define frequency and association with local risk factors as well as more data to create prevention strategies.

Regarding MGD, the prevalence of this condition varies from 3.5% to 70%, depending on the population studied.[15] A Spanish study reported a prevalence of only 21.9% in

patients for 40 years of age,[16] while in China, Lin et al. reported a prevalence of 61.7% in patients for 65 years of age.[17] Lekhanont et al. reported a prevalence of MGD of 46.2%, emphasizing that in symptomatic patients, it can increase up to 63.6%, while in asymptomatic patients, it is 37.2%.[18] A meta-analysis reviewed 21 articles on DGM prevalence, finding an overall prevalence of 35.8%, mostly in men, and more frequently in Arabs and Hispanics (71.0% and 67.5%, respectively).[19] This information is consistent with the prevalence shown in this study, 59.8%, being more severe in senior patients.

This study has some limitations that should be acknowledged. First, it is limited by a sample obtained from only one ophthalmological care center in Bogotá, so findings cannot be applied to the entire Colombian population. However, the prevalence and the characteristics of the pathology found suggest blepharitis is being overlooked and underdiagnosed, and therefore, left untreated, affecting the quality of life of many patients.

There is no doubt that aging is accompanied by countless changes that include hyperkeratinization of the terminal duct of the meibomian gland and subsequent acinar atrophy and decreased defense mechanisms at the level of the eyelid skin that lead to significant increase of various pathogenic organisms such as Staphylococcus aureus and the Demodex mite.[20,21] However, to allow early diagnosis and timely treatment that minimizes damage to the ocular surface, a correct evaluation of the lid margin should not be overlooked.[1]

Early diagnosis is crucial to prevent the worsening of symptoms and permanent ocular damage, even more so when simple eyelid hygiene can be a very effective treatment.[1,2] To raise awareness, encourage early diagnosis, lay the foundations for new studies that allow us to identify risk factors and of course, to evaluate therapeutic alternatives, it is very important to establish the real blepharitis prevalence in our population. The strategy to improve the rate of diagnosis of blepharitis would be through the education of the visual health professional in identifying the characteristic symptoms and signs of any type of blepharitis in order to be able to make an accurate classification and treatment.

Table 1. Demographic Data

Age	Mean: 59 years	ICR: 31
Sex		
	Female	60.8%
	Male	39.2%
Residence		
	Bogotá	88.9%
	Soacha	1.3%
Previous diagnosis		

	Yes	20.7%
	No	79.3%
Symptoms		
	Red eye	65.8%
	Palpebral pruritus	52%
	Tearing	46.3%
	Erythema of the lid margin	16.2%

Figures

Figure 1. Distribution of prevalence of blepharitis according to age y subtype.

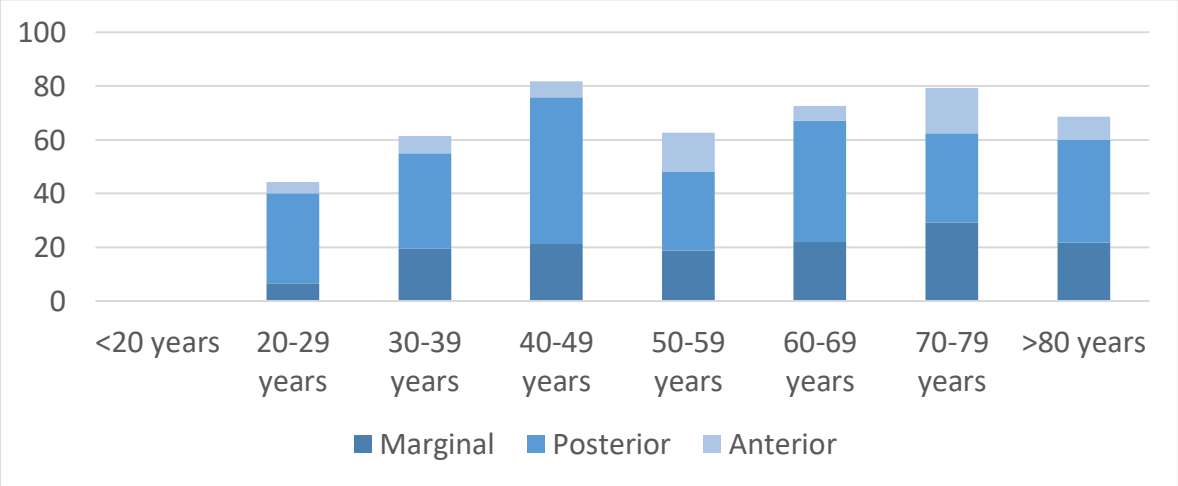
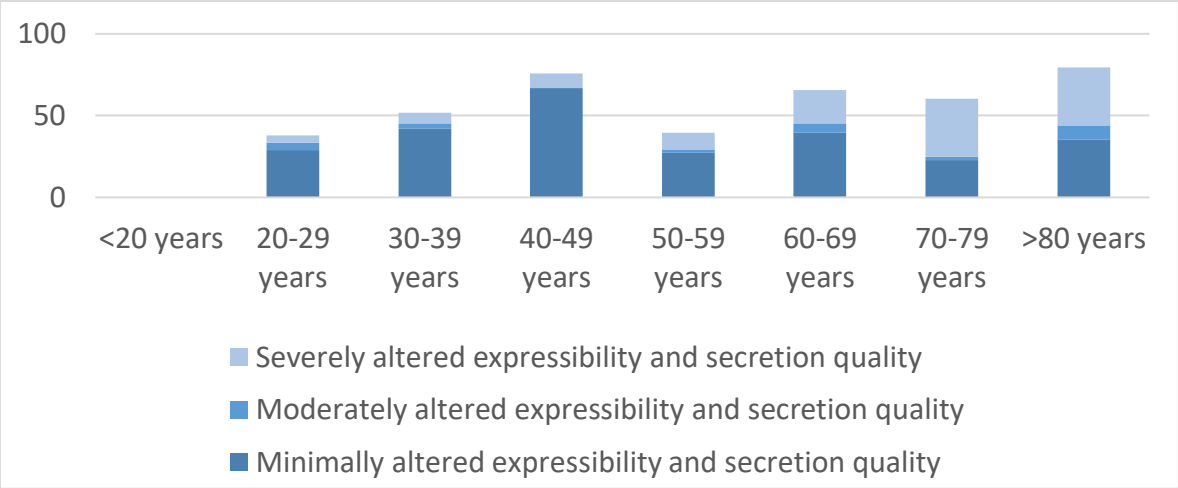


Figure 2. Distribution of prevalence of meibomian gland dysfunction according to age y severity.


100
50
0
<20 years
20-29 years
30-39 years
40-49 years
50-59 years
60-69 years
70-79 years
>80 years
Severely altered expressibility and secretion quality
Moderately altered expressibility and secretion quality
Minimally altered expressibility and secretion quality