

Chronic Blepharitis

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Abstract. This is a prospective study to estimate the prevalence of chronic blepharitis among patients visited the ophthalmology clinic in a tertiary care hospital in western Saudi Arabia over six months period. Chronic blepharitis was detected in 89%, 61.4% of them, were females mostly in their second decade of life. About 97.3% of the patients had the anterior type, 44.5% of them had isolated seborrheic blepharitis, 19.6% had isolated *Staphylococcal* blepharitis and 9% had an isolated Demodex blepharitis. Of all patients, Meibomian gland disease was found in 83%. About 29.7% of the patients were found to have associated seborrheic dermatitis, and 61.3% of them were females. Chronic blepharitis is a very common disease among our population and the most common type is anterior blepharitis mostly the seborrheic type. A larger scale study including different regions in the country is needed to find the predisposing factor for this high prevalence.

Keywords: Prevalence of blepharitis, Meibomian gland disease, Seborrhea, Demodex

Introduction

Although the true prevalence of chronic blepharitis is still unknown, it is considered one of the most common diseases seen by ophthalmologists, and it remains a diagnostic and therapeutic challenge. It is classified as anterior blepharitis when the inflammation is centered around the

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eyelashes and follicles and posterior when it involves the meibomian gland orifices. The anterior type can be subdivided into seborrheic and staphylococcal blepharitis. Posterior blepharitis can be caused by meibomian gland disease (MGD) and *Demodex folliculorum* (*D. folliculorum*) infestation^[1-3].

This is the first study in the region on the prevalence of this very commonly seen disease among patients visiting the eye clinic for various reasons; to estimate the magnitude and association of its different types.

Materials and Methods

All patients seen in our general ophthalmology clinic from January 2009 till July 2009 were included and evaluated by the same ophthalmologist. Anterior blepharitis was diagnosed when there was lid margin hyperemia, ulceration or scales on the eyelashes, either individually or in combination. The type of scales was further identified as: Scruff (flakes of material that adhere to the lashes) indicating *Seborrheic* blepharitis (SB), collaret (ring-like formations around the lash shaft) indicating *Staphylococcal* blepharitis (STB), sleeve (translucent like material at the base of the eye lash) is caused by *Demodex* blepharitis (DB)^[1]. MGD was diagnosed when the gland orifices were capped or blocked with or without expression of turbid fluid upon digital pressure along the lid margin. The presence of entropion, trichiasis, corneal scar, Giant papillary conjunctivitis and phlyctenulosis were also documented. The presence of associated seborrheic dermatitis was based on dermatologist diagnosis. None of the patients had bacterial, viral or trachoma infections at the time of evaluation.

All the information was registered on a preplanned data sheet that was approved by the hospital ethical committee and statistically analyzed with SPSS software Version 11 (SPSS, Inc.). Pearson's chi-square (χ^2) tests were performed to test for associations between variables. A *p* value of < .05 was considered statistically significant.

Results

A 500 patients were included in the study. A 445 (89%) of them were diagnosed with chronic blepharitis with a mean age of 33.5 years (range 7-75 years). A ratio 273/445 (61.3%) of the patients were females.

Isolated SB was detected in 198 patients (44.5%), isolated STB in 87 (19.6%), isolated *Demodex* infestation in 9 (2%), SSTB in 103 (23.1%), SB with *Demodex* infestation in 21 (4.7%), and STB with *Demodex* infestation in 15 (3.4%). All types of anterior blepharitis were present in combination in 18 (4%) and MGD was detected in 373 (83.8%) of the patients. Table 1 shows the prevalence of different types of blepharitis. Table 2 shows the prevalence of blepharitis among different age groups and Table 3 shows the prevalence of MGD in association with the other types of blepharitis.

Table 1. Prevalence of different types of blepharitis.

Type of Blepharitis	Number of Patients (%)
Anterior blepharitis	433 (97.3)
SB	198 (44.5)
SSTB	103 (23.1)
SD	21 (4.7)
STB	87 (19.6)
STD	15 (3.4)
DB	9 (2)
Combined all types	18 (4)
MGD	373 (83.8)

SB = Seborrheic blepharitis; SSTB = Mixed Seborrheic and Staphylococcal blepharitis; SD = Seborrheic blepharitis with *Demodex* infestation; STB = Staphylococcal blepharitis; STD = Staphylococcal blepharitis with *Demodex* infestation; DB = *Demodex* blepharitis; MGD = Meibomian gland disease.

Table 2. Prevalence of blepharitis in relation to different age groups.

Age Group	SB N (%)	STB N (%)	DB N (%)	SSTB N (%)	SD N (%)	STD N (%)	MGD N (%)	All Types N (%)
7-19	45 (22.7)	18 (20.7)	-	18 (17.5)	3 (14.3)	-	51 (13.7)	-
20-29	66 (33.3)	18 (20.7)	6 (66.7)	28 (27.2)	9 (42.9)	-	112 (30)	9 (50)
30-39	21 (10.6)	18 (20.7)	-	27 (26.2)	3 (14.3)	6 (40)	63 (16.9)	-
40-49	36 (18.2)	18 (20.7)	-	15 (14.6)	6 (28.8)	6 (40)	81 (21.7)	-
50-59	12 (6.1)	6 (6.9)	3 (33.3)	6 (5.8)	-	3 (20)	27 (7.2)	6 (33.3)
≥60	18 (9.1)	9 (10.3)	-	9 (8.7)	-	-	39 (10.5)	3 (16.7)
Total	198	87	9	103	21	15	373	18
P value	.026	.575	.001	.137	.090	.001	.001	.001

SB = Seborrheic blepharitis; STB = Staphylococcal blepharitis; DB = *Demodex* blepharitis; SSTB = Mixed Seborrheic and Staphylococcal blepharitis; SD = Seborrheic blepharitis with *Demodex* infestation; STD = Staphylococcal blepharitis with *Demodex* infestation; MGD = Meibomian gland disease

Table 3. Prevalence of MGD among different types of anterior blepharitis.

	SB N (%)	STB N (%)	DB N (%)	SSTB N (%)	SD N (%)	STD N (%)	All Types N (%)
MGD (%)	165 (83.3)	78 (89.7)	9 (100)	88 (85.4)	18 (85.7)	12 (80)	18 (100)
Total number	198	87	9	103	21	15	18
P value	.904	.137	.073	.608	.806	.691	.011

SB = Seborrheic blepharitis; STB = Staphylococcal blepharitis; DB = *Demodex* blepharitis; SSTB = Mixed Seborrheic and Staphylococcal blepharitis; SD = seborrheic blepharitis with *Demodex* infestation; STD = Staphylococcal blepharitis with *Demodex* infestation.

Additionally, 273 (61.3%) of the patients were female; 114 (41.8%) of them had SB, 57 (20.9%) had STB, 6 (2.2%) had DB, and 63 (23.1%) had SSTB. 21 (4.4%) had STD, 12 (4.4%) had SD and 225 (82.4%) had MGD ($p = .144, .371, .738, .965, .114, .687, .38$, respectively).

Furthermore, of all the patients, 132 (29.7%) had seborrhea based on dermatological diagnosis ($p = .033$). It detected in 48 (24.2%) of the 198 SB cases ($p = .024$), 27 of the 132 (20.5%) cases of STB ($p = .756$), and 42 (40.8%) of the 103 cases of SSTB ($p = .006$). 3 (14.3%) of the 21 SD patients ($p = .091$) and 105 (28.2%) of the 373 MGD patients ($p = .12$).

Three out of 445 (0.7%) of the patients had trichiasis and 27 out of 445 (6.1%) had giant papillary conjunctivitis. None of the patients were found to have entropion or corneal scar.

Discussion

Although blepharitis has been estimated to account for 4.5% of all ophthalmology patients, its true prevalence is still unknown. The only report in the literature is by McCulley *et al.*^[4] who studied 90 patients known to have chronic blepharitis. A 60% of them were found to have SB and they were mostly in their fifth decade. A 89% of our patients were affected, and 97.3% of them had anterior blepharitis. A 44.5% of them had seborrheic blepharitis and they were mostly their second decade of life ($p = .026$). This association with age has been observed by Huber-Spitzy *et al.*^[5] when they studied the microbiological and dermatological findings in blepharitis patients. We could not detect any statistically significant association between blepharitis and gender.

Seborrheic dermatitis is known to occur in association with SB with variable frequency. Of our patients, 29.7% showed a statistically significant association with skin seborrhea ($p = .033$). Those findings are very similar to Huber-Spitzy *et al.*^[5] who detected an association in 21.5% of their patients. However, McCulley *et al.*^[4] reported an association in 95%. This discrepancy in frequency in these three studies, which were conducted in different countries, might be related to the possible hereditary factors for developing seborrhea.

Staphylococcus aureus infection was considerable in the pre-antibiotic era, but it has now markedly decreased. However, a distinct entity seems to remain either alone or in combination with other forms of

blepharitis. About 19.6% of our patients had STB and 65.5% of them were females, a result that is comparable to McCulley *et al.*^[5] who found it in 15% of his patients, mostly among the 42-years-old females. Again, there was no statistically significant association between STB and age.

Demodex infestation has been linked to blepharitis in several studies. It was found residing in the meibomian glands causing MGD and it manifest itself clinically by producing cylindrical scales on the eye lashes^[3]. It was also suggested that it may blocks the hair follicles and act as a vector to attract bacteria. *Demodex* sleeves were found in association with SB in 32.6% of our patients. This result is very much comparable to Kamel *et al.*^[6] results on the microscopic presence of *Demodex* mites in the eyelashes of patients with SB. They found the mites in 28.8% of their patients. This suggests that the diagnosis of DB was based on its characteristic clinical finding and it can be highly accurate.

It has been documented by previous reports that free fatty acids produced in MGD can provide a good media for microbial growth, which can lead to the development of anterior blepharitis. McCauley *et al.*^[4] detected MGD (17%) mostly among SB patients. Among our patients, MGD was found in 83.8% and most common association was with DB (100%). It was hypothesized that the residence of *Demodex* within the meibomian gland might have a damaging effect on the glands leading to MGD and it's believed that this issue should be investigated further.

Conclusion

Chronic blepharitis is a very common disease seen among our patients visiting the general ophthalmology clinic. The most common type is seborrheic blepharitis that is affecting mainly patients in the second decade of life having seborrheic dermatitis. The cause of this high prevalence is unknown. Furthermore, a larger scale study involving other regions in the country is needed to better understand the etiology of this disease among our population that carries an associated significant morbidity.

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التهاب حواف الجفون

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المستخلص. لمعرفة نسبة وجود التهاب حواف الجفون بين مراجعي قسم العيون في مستشفى تخصصي في المنطقة الغربية، تم فحص جميع المراجعين لعيادة العيون خلال فترة ستة أشهر اكلينيكيًا لتشخيص التهاب العيون أو أي أمراض أخرى مصاحبة له، فوجد أن ٨٩٪ من المراجعين لديهم التهاب حواف الجفون، و ٦١,٤٪ منهم من الإناث ٢٨,٥٪ في العقد الثاني من عمرهم، وأن ٩٨,٣٪ لديهم التهاب الحافة الأمامية و ٨٣٪ لديهم التهاب الحافة الخلفية للجفون، و ٤٤,٥٪ ممن لديهم التهاب الحافة الأمامية بسبب التهاب حواف الجفون الدهني. لم توجد أي علاقة بين أي نوع من التهاب حواف الجفون وجنس الشخص. التهاب حواف الجفون هو مرض منتشر جدا بين المراجعين لعيادة العيون، وأكثر الأنواع انتشاراً هو التهاب الحافة الأمامية من النوع الدهني. إن القيام ببحث عن هذا المرض المنتشر جدا، والذي يجب أن يشمل مناطق أخرى من المملكة سيوضح أكثر نسبته ومسبباته.