Original Article

Prevalence and Associated Factors of Depression in Patients with Pterygium at Thammasat University Hospital

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Objective: To study the prevalence of depression in patients with pterygium and factors that are related to depression and pterygium.

Materials and Methods: The study was accomplished by descriptive study which selected studied population from patients who had pterygium at Thammasat Univeristy Hospital. Demographic characteristics and pterygium datas collected from the patients. Moreover, information regarding severity of dry eye disease, Ocular Surface Disease Index (OSDI), and scores from the 9Q-9 questions about the depression were also collected. The datas were stored as a unit of frequency was used to analyze the results. ANOVA, Simple linear regression and Pearson correlation were used for this purposes.

Results: Data collection of 328 samples involved; 314 patients with primary pterygium (95.7 percent) and 14 patients (4.3 percent) with recurrent pterygium. The score for Ocular Surface Disease Index (OSDI), of newly diagnosed cases (>13) found in 259 patients (79.0 percent). Depression prevalence in all pterygium samples was 22.9 percent. Demographic features of the population were not statistically significant, but in pterygium size more than or equal to 2.7 mm (p = 0.018) and time spent on using digital devices more than or equal to 2 hours per day (p = 0.023) were statistically significant affected to severity of depression.

Conclusion: The prevalence of depression was found in all sample groups of pterygium at the prevalent level of 22.9 percent. Demographic features did not have any statistically significant, but in pterygium size and time spent on using digital devices were statistically significant affected to severity of depression.

Keywords: Prevalence, Associated factors, Depression, Pterygium

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Pterygium is a disease characterized by degeneration of conjunctiva which grows to cover the cornea areas. The statistics regarding prevalence of dry eye patients in Bangkok indicated that more than 50 percent of the patients were also had pterygium[1]. According to the study regarding the prevalence of pterygium in people who were older than 40 years of age, more than 8.8 percent of people in this age group were found pterygium[2]. Therefore, pterygium was inevitably associated with symptoms of dry eye and affects the daily lives of patients. The disease is not a life threatening one and its existence is often overlooked. However, there were reports suggested that dry eye conditions correlated with depression and suicidal thoughts[3].

Depression is one of the mental disorders that increasingly caused death among those who suffer the disease. A research conducted by the World Health Organization collated results of the studies regarding depression in Southeast Asia which found that depression was the most common psychiatric disease that causes death among patients[4]. Research concerning comorbidity between depression, anxiety and eye-related diseases-cataracts, glaucoma, and aged related macular degeneration were found depressive symptoms at 6.7, 4.3, and 10.5 percent respectively[5].

According to statistical reports, chronic eye diseases were also related to depression. Hence, studying the prevalence of depression in patients with pterygium and other factors that were relevant to depression and pterygium.

Materials and Methods

The present cross-sectional retrospective study was approved by the Research Ethics committee 1, the Faculty of Medicine, Thammasat University and collected the data from Thammasat Hospital's Pterygium Screening Project on 30th March 2018. The inclusion criteria is primary and secondary pterygium aged between 15 to 80 years of age and exclude patients who were not mentally capable.

Data collection included the following information; age, gender, education, occupation, time spent outdoors (average number of hours/day), time spent on using digital devices (average number of hours/day). Moreover, severity levels of symptoms and signs on the ocular surface such as eye pain, eye irritation, teary eye, blurred vision, red eye, level of disturbances in daily life, size and type of pterygium, Ocular Surface Disease Index (OSDI) scores[6] and 9

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depression-related scores (9Q)[7,8] were also collected. The quantitative data was displayed as frequency unit numbers which was subsequently analyzed to obtain percentages and mean by using ANOVA and regression analysis (for correlation analysis, Pearson correlation coefficient was used). The results were considered statistically significant at $p \leq 0.05$. Statistical analysis was performed using the SPSS software version 22.0 (SPSS Inc, Chicago, IL).

The data was collected on 30th of March 2018 at the above said venue. The questionnaire had been prepared to obtain patient's information in order to provide care and recommendations to the patients. The questionnaire was tested by the simple content validity method by two ophthalmologists who are specialized in cornea and glaucoma. Administrative staffs also helped to verify the questionnaire's linguistic accuracy.

Results

There were 800 people who participated in the data collection process but only 328 patients were selected according to the selection criteria. Almost patients are primary pterygium type, old age, male, primary education graduates, general laborers. The collected data as shown in Table 1 concerned demographic information, size of pterygium, duration of time spent on digital equipment usage, and the duration of time spent outdoor. Moreover, analyzed the difference of data which size of pterygium more than 2.72 mm ($p = 0.018$) categorized by means of size, time spent on using digital devices more than 2 hours per day ($p = 0.023$) were statistically significant affected to severity of depression. Data showing the scores of symptoms and signs on ocular surface including eye pain, eye irritated, eye teary, blurred vision, eye redness and disturb daily life have shown in Table 2. The most common symptoms and signs on ocular surface is blurred vision (5.8 scores), however, in primary pterygium group, shows both blurred vision and eye redness are the most common. In recurrent pterygium group shows the most common is eye redness. In terms the scores of symptoms and signs on ocular surface and depression (Q1) which were assessed by Pearson correlation coefficient and the simple linear regression at the statistical significance level of 0.05, indicated that; the score of eye pain (C1), irritated eye (C2), teary eye (C3), blurred vision (C4), red eye (C5) and daily disturbances (C6) were increased in accordance with the severity of depression which the most effect is eye pain.

Data showing the severity of the Ocular Surface Disease Index (OSDI) has shown in Table 3 which the result shows scores more than 13 scores in pterygium is 259 patients (79.0%). In terms the severity of the Ocular Surface Disease Index (OSDI) and depression (Q1) which were assessed by Pearson correlation coefficient and the simple linear regression at the statistical significance level of 0.05, indicated that the severity of the Ocular Surface Disease Index (OSDI) were increased in accordance with the severity of depression. Simple linear regression revealed the relationship between depression levels (Q1) and the degree of severity of the Ocular Surface Disease Index (OSDI) which were valued at 12.5 percent ($R^2 = 0.125$) as shown in Figure 1.

Seventy-five patients (22.9%) reported symptomatic depression as obtained from the 9Q questionnaire, almost patients are in mild degree level which shows in Table 4.

Discussion

Thammasat University Hospital's Pterygium Screening Project on the 30th March 2018 was open to the public from all over Thailand who would like to participate in the screening process. There were more than 800 respondents of which 328 individual were selected and subsequently categorized as; 314 patients (95.7 percent) with primary pterygium and 14 patients (4.3 percent) with recurrent pterygium. According to the scores of symptoms and signs on the ocular surface for the 5 symptoms, blurred vision had the highest score at 5.83 points, followed by that of red-eye 5.71 points, eye irritation 5.61 points, teary eye 4.50 points, and eye pain 3.83 points. As for the disturbance in daily life, the average score was 6.36 points whereas the scores of Ocular Surface Disease Index (OSDI) indicated that 79 percent of the total population had the initial stage of the disease. Those who had moderate level of the severity were accounted for 34.8 percent, and the most severe level was found in 13.4 percent of the population.

Patients with pterygium who answered 9 of the depression-related questions and scored 7 points or higher, were considered to have symptoms of depressive disorder. There were 75 people or 22.86 percent who were identified as having the depressive disorder for which patients with primary pterygium found in 70 people or 22.29 whilst recurrent pterygium was found in 5 people or 35.71 percent. Upon comparing the prevalence of the depression found in general population and the population with other physical diseases, the prevalence found in those reports were between 22.0 to 59.7 percent[4]. Although similar prevalence was found in pterygium, but upon comparing to patients with other type of eye disease, pterygium was associated with higher prevalence of depressive disorder. The prevalence in patients with cataract, glaucoma, and aged related macular degeneration were 6.7, 4.3, and 10.5 percent respectively[5]. In Thailand, studies regarding depression prevalence in patients with chronic eye diseases were conducted in patients with iritis/anterior uveitis for which the prevalence of 8.1 percent was recorded[9]. However, the results found that the prevalence of depression in patients with pterygium was 22.29 percent which was considered relativity high when compared to other eye diseases.

Upon considering the demographic data which consisted of age, gender, education and occupations against the depression levels in all sampled populations whether this be patients with primary and recurrent pterygium, there was no factors of statistically significant level that could signify depression among these patients.

According to the relationship between the duration of time spent on digital devices, the duration of time spent

Table 1. Demographic and clinical data of patients (n = 328)

Characteristics	Type of pterygium			*p*-value[1]	*p*-value[2]
	Primary n (%)	Recurrent n (%)	Total n (%)		
Age (years)				0.715	
<30	16 (5.1)	0 (0.0)	16 (4.9)		
30 to 40	53 (16.9)	4 (28.6)	57 (14.7)		
41 to 50	71 (22.6)	2 (14.3)	73 (22.3)		
51 to 60	99 (35.1)	6 (42.9)	105 (32.0)		
61 to 70	61 (19.4)	1 (7.1)	62 (18.9)		
>70	14 (4.5)	1 (7.1)	15 (4.6)		
Mean age	51.21	50.9	51.2		
Gender				0.685	
Female	105 (33.4)	6 (42.9)	111 (33.8)		
Male	209 (66.6)	8 (57.1)	217 (66.2)		
Education				0.713	
Uneducated	36 (11.5)	4 (28.6)	36 (11.0)		
Primary education graduates	98 (31.2)	1 (7.1)	102 (31.1)		
High school graduates	72 (22.9)	7 (50.0)	73 (22.3)		
Bachelor's degree graduates	75 (23.9)	2 (14.3)	82 (25.0)		
Vocational education graduates	33 (10.5)	0 (0%)	35 (10.7)		
Occupation				0.500	
Unemployed	76 (24.2)	1 (7.1)	77 (23.5)		
General laborers	93 (29.6)	4 (28.6)	97 (29.6)		
Officer	28 (8.9)	3 (21.4)	31 (9.5)		
Farmer	41 (13.1)	2 (14.3)	43 (13.1)		
Officialdom	27 (8.6)	1 (7.1)	28 (8.5)		
Private business owners	13 (4.1)	2 (14.3)	15 (4.6)		
Merchant	36 (11.5)	1 (7.1)	37 (11.3)		
Size of pterygium					
Mean (mm)[3]	2.68	3.86	2.72		
<2.72			147 (44.8)	0.018*	
≥2.72			181 (55.2)		
Time spent outdoors					0.718
Mean (hours/days)	3.64	5.79	3.73		
<2 hours/day			52 (15.9)	0.627	
≥2 hours/day			276 (84.1)		
<3 hours/day			106 (32.3)	0.904	
≥3 hours/day			222 (67.7)		
<4 hours/day			148 (45.1)	0.324	
≥4 hours/day			180 (54.9)		
<5 hours/day			192 (58.6)	0.557	
≥5 hours/day			136 (41.4)		
Time spent on using digital devices					0.016*
Mean (hours/days)	3.46	5.0	4.39		($R^2$1.8%)
<2 hours/day			111 (33.8)	0.023*	
≥2 hours/day			217 (66.2)		
<3 hours/day			154 (47.0)	0.028*	
≥3 hours/day			174 (53.0)		
<4 hours/day			184 (56.1)	0.038*	
≥4 hours/day			144 (43.9)		
<5 hours/day			219 (66.8)	0.050*	
≥5 hours/day			109 (33.2)		

[1] = Analyzed to obtain percentages and mean by using ANOVA; [2] = Regression analysis (for correlation analysis, Pearson correlation coefficient was used); [3] = 2.72 mm is mean of size

outdoors, and the severity of depression, the results revealed that in all patients with pterygium, the duration of using digital devices had an effect on the depression severity, in particularly more than or equal 2 hours per day. However pterygium has related with dry eye which related with depression, it is possible that the duration of using digital

Table 2. Scores of symptom and signs on ocular surface

Data	primary scores (314)	Recurrent scores (14)	Total (328) scores (%)	*p*-value[1]
Total scores (C) (60)				
Mean	31.9	31.6	31.9	
Eye pain (C1) (10)				<0.001* (R^2 5.7%)
Mean	3.8	3.9	3.8	
Eye irritated (C2) (10)				0.001* (R^2 3.6%)
Mean	5.6	5.6	5.6	
Eye teary (C3) (10)				0.010* (R^2 2.0%)
Mean	4.5	4.9	4.5	
Blurred vision (C4) (10)				<0.001* (R^2 4.1%)
Mean	5.6	5.4	5.8	
Eye redness (C5) (10)				<0.001* (R^2 5.0%)
Mean	5.6	6.5	5.7	
Disturb daily life (C6) (10)				<0.001* (R^2 4.6%)
Mean	6.4	5.5	6.4	

[1] = Regression analysis (for correlation analysis, Pearson correlation coefficient was used)

Table 3. The Ocular Surface Disease Index (OSDI) level in pterygium patients.

OSDI (total scores 48)	Primary (314) n (%)	Recurrent (14) n (%)	Total (328) n (%)	*p*-value[1]
No symptoms (0 to 12 scores/0 to 25.0%)	67 (21.3)	2 (14.3)	69 (21.0)	<0.001* (R^2 12.5%)
Mild (13 to 22 scores/25.1 to 45.8%)	98 (31.2)	3 (21.4)	101 (30.8)	
Moderate (23 to 32 scores/45.9 to 66.7%)	107 (34.1)	7 (50.0)	114 (34.8)	
Severe (≥33 scores/66.8%)	42 (13.4)	2 (14.3)	44 (13.4)	

[1] = Regression analysis (for correlation analysis, Pearson correlation coefficient was used)

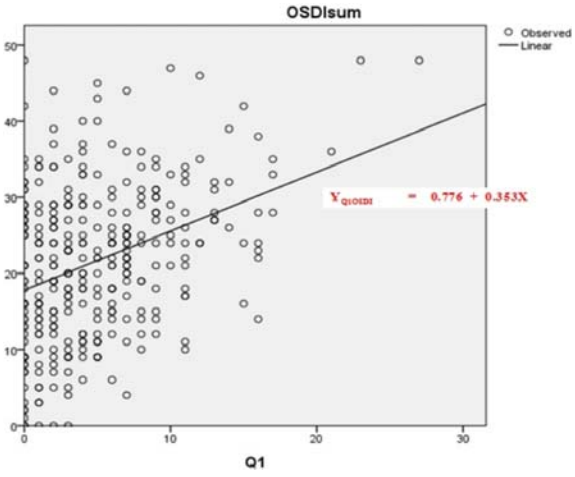

Figure 1. The relationship between depression levels (Q1) and the degree of severity of the Ocular Surface Disease Index (OSDI).

devices may relate with depression in all dry eye patient which make pterygium patients too. The duration of time spent outdoors had no influence on the depression levels. In relation to the level of severity of symptoms and signs on ocular surface, including eyes pain, eye irritation, teary eye, blurred vision, red-eye and disturbances in daily life, the increases of these symptoms were in agreement with the increase of the depression severity. The depressive disorder level and the degree of severity of the Ocular Surface Disease Index (OSDI) was found to influence each other.

The study also suggested that pterygium which had signs and symptoms on the ocular surface was associated with depression. The results were consistent with research conducted in Korea that signified the relationship between dry eye symptoms and suicidal thoughts in patients with depression[3]. A summary report of the Dry Eye Workshop (DEWS II) suggested that dry eye disease affected economic suffering, vision ability, quality of life, work efficiency, and mental and physical pains[10,11]. The results help to emphasize that pterygium is another disease that affects the daily life of patients which could be associated with depression. This research is anticipated to be beneficial for patients with pterygium and further studies. However, the research faced challenges due to the retrospective collection of data which may result in data incompletion. However, the information can potentially be improved to benefit future research.

Table 4. Levels of the depression as obtained from the 9Q questionnaire in pterygium patients

Depression level (from 9Q)	Primary (314) Scores (%)	Recurrent (14) Scores (%)	Total (328) Scores (%)
Asymptomatic (<7)	244 (77.7)	9 (64.3)	253 (77.1)
Mild (7 to 12)	48 (15.3)	4 (28.6)	52 (15.9)
Moderate (13 to 18)	19 (6.1)	1 (7.1)	20 (6.1)
Severe (≥19)	3 (1.0)	0 (0.0)	3 (0.9)

Conclusion

Pterygium is a disease commonly found in ophthalmic medicine in Thailand. Although the disease may not lead to vision loss, but this research pointed out that the prevalence of depression, in association with this disease, was quite high. The prevalent of depression in patients with pterygium could be higher than any other chronic eye diseases. Demographic features did not have any statistically significant, but in pterygium size and time spent on using digital devices were statistically significant affected to severity of depression.

What is already known on this topic?

Dry eye conditions correlated with depression and suicidal thoughts. Pterygium was inevitably associated with symptoms of dry eye and affects the daily lives of patients.

What this study adds?

The prevalence of depression in patients with pterygium could be higher than any other chronic eye diseases. Pterygium size and time spent on using digital devices were affected to severity of depression.

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Potential conflicts of interest

The authors declare no conflicts of interest.

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ความชุกและปัจจัยที่เกี่ยวข้องของภาวะซึมเศร้าผู้ป่วยโรคต้อเนื้อในโรงพยาบาลธรรมศาสตร์เฉลิมพระเกียรติ

วรนาถ ทัตติยกุล, ปกรณ์กิจ พฤกษาอุดมชัย

วัตถุประสงค์: ศึกษาความชุกของภาวะซึมเศร้าในผู้ป่วยโรคต้อเนื้อและปัจจัยที่เกี่ยวข้องของภาวะซึมเศร้าและโรคต้อเนื้อ

วัสดุและวิธีการ: เป็นการศึกษาเชิงพรรณนาย้อนหลัง (Retrospective Descriptive study) โดยการเลือกประชากรแบบเจาะจงกลุ่มตัวอย่างโรคต้อเนื้อ (Purposive sampling) ณ โรงพยาบาลธรรมศาสตร์ฯ เก็บข้อมูลลักษณะพื้นฐานประชากรและข้อมูลที่เกี่ยวข้องกับต้อเนื้อ ระยะเวลาที่ใช้อุปกรณ์ดิจิตัล ระยะเวลาอยู่ในที่กลางแจ้ง ระดับคะแนนประเมินความรุนแรงของภาวะตาแห้งและระดับคะแนนโรคซึมเศร้า แสดงข้อมูลเชิงปริมาณเป็นความถี่หน่วยตัวเลข วิเคราะห์ผลเป็นค่าเฉลี่ยและหาความสัมพันธ์ โดยใช้สถิติ ANOVA, simple linear regression และ Pearson correlation

ผลการศึกษา: รวบรวมข้อมูลได้จำนวน 328 คน แบ่งเป็นชนิดปฐมภูมิ 314 คน (95.7%) และชนิดเป็นซ้ำ 14 คน (4.3%) คะแนนประเมินความรุนแรงของโรคตาแห้ง Ocular Surface Disease Index (OSDI) ที่เริ่มมีอาการ (>13) พบ 259 คน (79.0%) และพบความชุกโรคซึมเศร้าในกลุ่มตัวอย่างต้อเนื้อทั้งหมดร้อยละ 22.86 ปัจจัยพื้นฐานด้านประชากรที่แตกต่างกันไม่ได้มีความสำคัญอย่างมีนัยสำคัญทางสถิติต่อระดับโรคซึมเศร้า แต่ในขนาดต้อเนื้อที่มากกว่าหรือเท่ากับ 2.72 มิลลิเมตรและระยะเวลาที่ใช้อุปกรณ์ดิจิตัลมากกว่าหรือเท่ากับ 2 ชั่วโมงมีผลต่อระดับซึมเศร้าที่แตกต่างกันอย่างมีนัยสำคัญทางสถิติ

สรุป: พบความชุกโรคซึมเศร้าในกลุ่มตัวอย่างต้อเนื้อทั้งหมดร้อยละ 22.86 อายุ เพศ การศึกษาและอาชีพที่แตกต่างกันในผู้ป่วยต้อเนื้อไม่ได้มีความสำคัญอย่างมีนัยสำคัญทางสถิติต่อระดับโรคซึมเศร้า แต่ขนาดต้อเนื้อและระยะเวลาที่ใช้อุปกรณ์ดิจิตัลมีผลต่อระดับโรคซึมเศร้า