DRY EYE DISEASE AND ANTIDEPRESSANTS

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ABSTRACT

OBJECTIVES: *One of the common health problems is dry eye disease. The chronic painful symptoms of DED can cause depression and conversely the anti-depressive medications can themselves cause DED. Aim was to know dry eye findings in patients using antidepressants.*

DESIGN: *A hospital based cross sectional study. Place of study was Abbas Institute of Medical Sciences, Muzaffarabad, (Dec.2016-Dec.2017).*

METHODS: *204 patients already been diagnosed with depression and on antidepressants, aged 32-72 years attending eye OPD or referred from other departments were screened for dry eye after taking their consent and permission from Ethical Committee. Dry eye questionnaire (DED-6) was administered by a trained researcher while a comprehensive ophthalmic examination along with dry eye tests were performed by a single surgeon under the same physical conditions. Dry eye disease was diagnosed based on the 2007 Dry Eye Workshop (DEWS) guidelines. Dry eye is defined as having one or more symptoms and at least one sign. Data were analyzed for simple frequencies/percentages.*

RESULTS: *Among 204 patients [121 males & 83 females], 120(59%) subjects were symptomatic having DE symptoms often or all the time. 49.0% were having depression for the last three years and were using antidepressants for the last 24 months. The patients with dry eye were older than those without dry eye (46 years old and 38 years old, respectively). Patients with longer duration of depression and on antidepressants showed higher DE symptoms.*

CONCLUSION: *This study showed that patients on antidepressants suffered from dry eye symptoms.*

INTRODUCTION

Dry eye disease is a multifactorial disease of tear film resulting in damage to ocular surface and unstable tear film.[1] In general population, depression is common mental health condition.[2] Every fifth American uses antidepressants medications.[3] In Pakistan the prevalence of depression is high in rural women (66%) compared to (10%) urban areas men. The mean overall point prevalence is 33.62%.[4]

According to global disability burden BDG, 2010 study, depression is the leading cause of disability and stands second in BDG which is defined as years lived with disability.

Antidepressants drugs correct chemical imbalances of neurotransmitters released by one nerve and taken up by other nerves thus reducing depression symptoms. Reuptake is a process by which neurotransmitters are taken up by the same nerves.[5]

In the brain, serotonin, dopamine and norepinephrine are those neurotransmitters which are related to depression. They may be prescribed alone or in combination with other medications.[6]

Selective serotonin reuptake inhibitors (SSRIs) and serotonin/norepinephrine reuptake inhibitors (SNRIs) are two classes of antidepressants being used for major anxiety and depressive disorders, obesity, dry eyes and dry mouth related to menopausal symptoms. Lacrimal secretions are regulated by neuronal release of serotonin.[7] 5-HT1A, 5-HT2A, 5HT2C and 5-HT7 are serotonin receptors involved in intraocular pressure dynamics. [8] SSRIs have higher dry eye prevalence than SNRIs.

In general, antidepressants inhibit the reuptake of neurotransmitters and increase their levels around the nerves.[9]

Our aim was to know the effect of common antidepressants on eye wetting.

MATERIAL & METHODS

There were 204, already been diagnosed or newly diagnosed patients of depression, using antidepressants for <3 years aged 32-72 years attending eye OPD and referred from other department of this hospital who were screened for DE. Baseline characters were recorded and dry eye questionnaire (DEQ-6) was administered by a trained researcher. The detailed eye examination and dry eye tests were performed by a single surgeon under the same physical conditions.

Those having recent eye surgery, any systemic disease, using any drops, not diagnosed as depression and those not on antidepressants were excluded.

DE positive signs were DE symptoms scoring, tear breakup time TBUT $\leq$ 10 seconds), Schirmer test (ST) $\leq$ 5 mm in 5 minutes, corneoconjunctival staining score of $\geq$ 1 points and the presence of telangiectasias or mucous threads on slit lamp examination. Diagnosis was made on three out of five parameters based on the guidelines of Dry Eye Workshop (DEWS) 2007.

RESULTS

Among 204 patients with depression, aged 32-72 years [121 male- and 83 female] mean age 52 years, attending eye OPD. 120(59%) patients 69 (57.5%) male and 51 (42.5%) female had dry eye disease compared with patients who did not have dry eye based on dry eye workshop 2007 guidelines.

There were 122(59.7%) urban and 40.3% were rural while 32.8% were housewives. About 40% were smokers and 37.7% were internet users (Fig 1). The patients with dry eyes were older (46 years) than those without dry eye (38 years old). (Table.1).

49.0% were having depression for the last three years and were using antidepressants for the last 24 months. Out of those 18.2% patients developed dry eye during< 3 years of depression and 45% subjects had DE after >6 years of depression. The time of taking antidepressants was longer than 24 months compared to the patients without dry eye (34 months and 12 months, respectively). (Table. 2).

38% DE patients had lower Schirmer test values than those without DE. Also, patients using (SSRIs) showed lower Schirmer levels ($\leq$ 5 mm) compared with those using (SNRIS).

We found that risk for eye dryness was increased with both SSRIs and SNRIS. (Table 3). Also Patients with longer duration of depression and on antidepressants showed higher DE symptoms.

Table 1: Baseline characters

Age Group		Male	Female
32-45	78	52 (67%)	26(33%)
46-58	69	36(52,2%)	33(47.8%)
59-72	57	28(49.1%)	29(50.9%)
Total	204	116(56.9%)	88(43.1%)

Table 2:

	Total	Male	%	Female	%
Dry eyes	120	69	(57.5%)	51	(42.5%)
Depression < 3yrs	100	58	58%	42	42%
Depression > 6yrs	104	61	58.6%	43	41.4%

Graph 1: Frequency of depression in different categories in different genders.

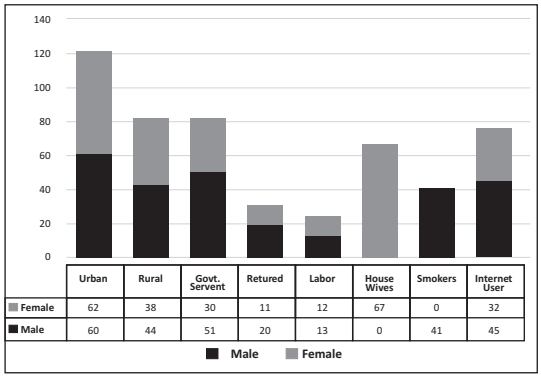

Table 3: DE and duration of Antidepressant use

Group	Duration	Sample	Dry eye	Percentage
A	< 3 years	102	19	18.2%
B	<6years	82	27	33%
C	>6years	20	9	45%
Total		204	55	27%

Table 4: DE and age-wise relationship

Group	Age group	Sample	Dry eye	Percentages
A	32-45	78	13	16.6%
B	46-58	69	24	34.7%
C	59-72	57	28	49%
Total		204	65	31.8%

DISCUSSION

Dry eye disease (DED) is a common health problem. The chronic painful symptoms of DED can cause depression and conversely anti-depressive medications can themselves cause DED.[10]

Globally common mental disorder is depression which was estimated as more than 300 million people of all ages.[11] Dry eye is frequent problem in patients with depression, especially in older patients.[12] Two retrospective population-based studies reported that 17% of subjects with depression had DED as opposed to 10% without this diagnosis.[13] The second study reveals 24% of patients with depression had DED compared to 18% without this diagnosis.[14]

In Pakistan five community-based studies reported prevalence for Depression as 66% in rural women to 10% in urban men and the mean prevalence was 33.62%.[15]In present study overall DE prevalence was 59% similar to other study.

In urban Rawalpindi prevalence of depression was estimated as 10% for men and 25% for women[16]. While in rural community the prevalence was 25.5% for men and 57.5% for women[17].

Research has shown that long-term depression increases chronic pro-inflammatory cytokine levels worsening DED. Also higher depressive symptoms and omega-6 to omega-3 ratio can enhance the production of pro-inflammatory cytokines reported by Kiecolt-Glaser et al.[18]

In present study 45% subjects with depression and using antidepressants for > 6 years had more DE symptoms showing that patients who had longer duration of depression and taking antidepressants for a longer period of time were more prone to DE.[19]

In this review 57.5% male were affected with DE which is contrary to other study mentioning that more women were affected by depression than men[20], similarly 58% subjects with depression were male in our study.

Selective serotonin reuptake inhibitors (SSRIs) are most common antidepressants having minimum side effects like dry mouth, weight gain and suicidal thoughts.[7]

SSRIs have a higher DE prevalence than SNRIs. SSRIs inhibit serotonin reuptake in the central nervous system.[21] Human tears also contain serotonin and its changes are related with dry eye subtypes.[5]

The most common psychiatric problem is late life depression (LLD) so Antidepressants are potential cause of dry eye disease.[22]

Ophthalmologists should have some training in mental health diseases. Since depression is related with DE symptoms and reduced tear secretion, subjects with DED require proper management and screening of depression.

CONCLUSION

Patients with longer duration of depression and on antidepressants for longer period of time showed higher DE symptoms with reduced tear formation in our study.

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