Eye Drought Generated by Work on Screen in a Professional Environment in Conakry

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OBJECTIVE: to determine the symptoms of dry eye caused by working on computer screens in a professional environment in Conakry and to measure tear secretion. PATIENTS AND METHOD: professional users of computer screens selected in a company in Conakry. The significance of dry eye symptomatology was assessed by the Ocular Surface Disease Index (OSDI) test questionnaire. Tear secretion was measured by the Shirmer I test without local anesthesia. We considered as normal tear secretions wetting of paper greater than or equal to 10mm and as hyposecretion a value less than or equal to 10mm after 5mn. The tear film breakup time (TBUT) is the time to break up the tear film. It is assumed that the GOAL is 15 seconds or more. Conversely, a GOAL of fewer than 10 seconds is considered pathological. RESULTS: we examined 65 patients (130 eyes), 27 men (41.5%) and women 38 (58.4%). The average age was 41.9 years. Symptoms were normal for 21 patients (60%), minimal 5 patients (14.3%), moderate for 8 patients (22.9%) and severe for 1 patient (2.8%). We found hyposecretion in 51 eyes (72.9%). A normal secretion for 19 eyes (27.1%). A correlation has been found between screen time, age and hyposecretion. CONCLUSION: Dry eye is a common condition among professional computer users. It sometimes constitutes a work stoppage with the consequence of slowing down the company's activities. This drought is favored by certain ergonomic factors that should be better understood for their management in preventive measures.

Keywords: work, computer, dry eye, Conakry

INTRODUCTION

Dry eye was redefined in 2007 as a multifactorial condition of tears and the ocular surface generating symptoms of discomfort, visual abnormalities and tear film instabilities resulting in potential damage to the ocular surface Report of the International Dry Eye Workshop (2007).

With the advent of computer screens, it can be seen that a large number of operators primarily complain of eye fatigue or asthenopic disorder characteristic of visual overload. As a result, ophthalmologists and ergonomists are increasingly called upon, first about possible risks to their eyesight and then, above all, to provide them with the means to obtain the minimum of visual comfort. Dry eye can influence the patient’s quality of life and visual function (Friedman NJ. et al. 2010).

The patient therefore sees his health and wellbeing seriously impaired. A deterioration in the quality of the tear film and changes in the ocular surface has been found in users of computer screens in the workplace. The objective of this study was to determine the symptoms of dry eye and measure the tear secretion of dry eye caused by working on a computer screen in the workplace in Conakry.

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PATIENTS AND METHODS

This is a cross-sectional and descriptive study conducted from June 1 to October 31, 2019 on dry eye disease in computer screen users selected from a company in Conakry.

Only consenting patients who responded favorably to the questionnaire were included. Occasional computer users were not included in the study. Shimer's 1 test, and TBUT were performed on the patients. Symptoms and severity were studied using the ocular surface disease index (OSDI) questionnaire. This test assesses the severity of the symptomatology and its impact on visual function Walt JG. Et al. (1997).

It has 12 questions. The answers are graded from 0 to 4 per question asked with a maximum total score varying from 0 to 100 points. Based on the final score, the patient's symptomatology was classified as normal (0-12), mild (13-22), moderate (23-32), or severe (33-100).

The Shimer I test was used to study tear secretion. It uses a strip of Whatman # 41 filter paper measuring 35mm long and 5mm wide to measure the quality of tears produced, after placement at the junction of the outer 1/3 and inner 2/3 of the inferior conjunctival cul de sac.

The Shimer I test is performed without local anesthesia, after 5 minutes length of the filter paper wetting zone is measured excluding the area in contact with tarsal conjunctiva. The patient looks straight ahead, to limit contact of the device with the cornea and blinks normally. The value retained as the threshold is discussed. Shimer estimated that a wetting zone value of less than 15mm suggested dry eye, but Batham estimated it to be 10mm instead Walt JG. Et al. (1997). In the international criteria for the classification of Sjogreen's syndrome, the accepted limit is set at 5mm Norn MS.et al. (1973)

Beyond 20 minutes, the test does not allow a conclusion. If the Shimer type I test occupies a historical place and still of reference, in the diagnosis of dry eye, & the clinical relevance is discussed Vitali C. et al (2002) ; Baudouin C.et al (2001). The Shimer II test: This is a Shimer with nasal stimulation. It is currently abandoned.

Tear film break up time test procedure and interpretation

The fluorescein dye is instilled in to the eye, and it disperses there after a few flickers of the eyelid. Using a slit lamp and a pre-assembled blue filter, the time between the last eyelid blink and the rupture of the colored tear film is measured. To do this, the eyes are closed and then opened again, and kept open until the tear film spontaneously breaks. If the eye is healthy, the tear film rupture time is more than 10 seconds. If this time is less than 10 seconds, the tear film is unstable.

Data were recorded and analyzed using epi info software. The variables analyzed were: age, sex and tear secretion. Statistical analysis was performed as means and percentages.

RESULTS

We examined 65 patients (135 eyes), 27 men (41.5%) and 38 women (58.46%). The average age was 43.11 years (range 23 to 68 years).

67.69% had more than 6 hours of working time per working day in front of the screen.

64.61% of patients presented with dry eye as per the OSDI score.

![Eye dryness](image)

**Fig. 1:** Distribution of patients according to the severity of the symptoms (OSDI score)

The eyes were normal for 23 patients (35.38%). Dry eye was minimal for 32 patients (49.23%), moderate for 8 patients (12.30%) and severe for 2 patients (3.07%).

After measuring the tear secretion of 130 eyes on the Shimer test. We found normal secretion for 113 eyes (86.92%) and hyposecretion for 17 eyes (13.08%). This hyposecretion was moderate for 14 eyes (10.70%) and severe for 3 eyes (2.30%). This hyposecretion could be correlated with age, sex and duration of work.

<table>
<thead>
<tr>
<th>Shimer test</th>
<th>Effective</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal secretion</td>
<td>113</td>
<td>86.92</td>
</tr>
<tr>
<td>Hyposcretion</td>
<td>17</td>
<td>13.08</td>
</tr>
<tr>
<td>Severe</td>
<td>14</td>
<td>10.70</td>
</tr>
<tr>
<td>Moderate</td>
<td>3</td>
<td>2.30</td>
</tr>
</tbody>
</table>

Table 1: Distribution of patients according to the result of the Shimer test.
DISCUSSION

Dry eye is a complex and frequent disease that is often poorly considered due to its apparent benignity. Especially the visual impact of dry eye is often underestimated and poorly evaluated in patients who regularly have normal corrected visual acuity.

In our series, the mean age was 43.11 years and the majority of patients examined were young and active.

We found a female predominance in our study (58.46%). The relationship between dry eye and gender remains controversial as found in our series and for others, a female predominance linked to the decrease in estrogen after menopause is reported Villani E et al. (2011).

The prevalence of dry eye in our patients was 64.61%, this rate is higher than that of Kawashima et al. (2015). Which reported a prevalence of dry eye at 60% in subjects working on computers, it caused a significant drop in productivity at work which is increased by a higher rate of anxiety and depression in subjects suffering from dry eye (Na K-S, et al. 2015).

Walt et al reported that the OSDI test assesses symptomatology and assesses the functional significance associated with environmental factors in sicca syndrome Walt J et al. (1997).

After investigation, the OSDI questionnaire made it possible to find symptoms related to dry eye in 64.61% of patients. In our study we found after measuring the tear secretion of 130 eyes with the test of Shirmer 1, a normal secretion for 113 eyes (86.94%) a hyposecretion for 17 eyes (13.07%).

CONCLUSION

Dry eye is a common condition among professional computer users. It sometimes constitutes a work stoppage with the consequence of slowing down the company's activities. This drought is favored by certain ergonomic factors that should be better understood for their management in preventive measures.

REFERENCES

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