

Computer Vision Syndrome: Affecting Young and Old Alike

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Summary

The advancement in technology is no doubt a boon to the society, but it is also attached with a price that a person has to pay for it. In today's era, these amenities are an important part of everybody's lives from a young child to an adult. The digital devices in the form of computers, laptops, mobile phones, I-pads etc. are included in day to day lives of everyone, helping people achieve results much faster and has made our lives easy. When used in excess or in an improper way, these are associated with various health hazards like musculoskeletal and ocular complications. Ocular problems are reported as the most frequently occurring health problems among computer users. Here we report case of a young banker who was suffering from computer vision syndrome and after proper evaluation and guidance, she got better.

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Introduction

Computer Vision Syndrome or Digital Eye Strain, are a group of eye and vision-related problems that occurs due to prolonged use of digital devices. Excessive and improper use of these digital devices causes ocular and musculoskeletal problems to an extent that it affects day to day activities of an individual.

According to the American Optometric Association, it is defined as a complex of eye and vision problems related to the activities which stress the near vision and which are experienced in relation, or during the use of the computer and which worsens on excessive use of these devices¹.

The most common symptoms associated with Computer Vision Syndrome (CVS) or Digital Eye Strain are headaches, eyestrain, blurring of vision, redness and dryness in the eyes, and musculoskeletal pain. The common causes of computer vision syndrome are excessive use, poor lighting, glare on a digital screen, improper viewing distances, poor seating posture, uncorrected vision problems, or a combination of these factors.

Many of the visual symptoms experienced by users are only temporary and will get better after stopping digital use, however, some individuals may experience continued visual problems or worsening of the visual symptoms.

The mechanisms for computer vision syndrome are:

- (i) Extra ocular mechanism
- (ii) accommodative mechanism
- (iii) ocular surface mechanism³

Extraocular mechanism causes musculoskeletal symptoms such as neck stiffness, pain, headache, backache and shoulder pain, due to improper placement of the computer screen. Accommodative mechanism causes blurring of vision, double vision, presbyopia, myopia and slowness of focus change. Transient myopia was observed in 20% of computer users at the end of their work, however, prolonged period of computer usage can result in worsening of the ocular problems².

Ocular surface mechanism causes symptoms such as

dryness of the eyes, redness, gritty sensation and burning after extended period of computer usage. Dryness and redness may be due to reduction in the blink rate, increased surface of cornea exposure caused by horizontal gaze at the computer screen, corneal dryness, reduction of tear production, contact lens usage etc.^{3,4}

Bright lights falling on the screen leads to further problems. These bright light sources need to be controlled with proper blinds, filters or adjustment of the room arrangement so that an acceptable level of lighting is obtained to minimize visual fatigue. Different age groups may require different light intensity to work with, workers over 50 years of age tend to require twice the light levels of young adults to perform the same task⁵.

The use of screen filters can reduce glare and reflection of the computer screen⁶. Screen brightness and contrast should be adjusted to provide balance with room lighting and maximum visibility. Musculoskeletal problems related to head and eye postures can often be prevented by proper workstation adjustment. Proper distance from the screen, proper adjustment of the image size and proper height of the seat are all important factors to be considered. It is recommended that the eyes should be about 35-40 inches from the screen and that the screen should be placed 10-20 degrees below or that the middle of the screen 5-6 inches below eye level. Improved physical ergonomics of the computer workstation has been proven to reduce ocular discomfort and improve performance^{2,7}. Taking a short break, stretching the muscles, change of scenery and a quick walk around the office have been shown to improve productivity and reduce ocular symptoms of stress. The best way for prevention is decreasing or stopping the use of digital devices.

Dry eyes secondary to decreased blink rate can be easily managed by applying lubricating eye drops or artificial tears. Workers who are using contact lens must be more careful with any ocular symptom which started acutely such as pain and redness. Use of proper corrective glasses for refractive errors such as myopia, astigmatism and presbyopia is important to prevent further deterioration

of the ocular symptoms which can lead to poor work performance and poor quality of life.

Case Report

Here we report a case of 35-year-old banker lady who presented to ophthalmology department, with history of persistent pain in both eyes, intermittent blurring of vision, eye strain along with dull persistent pain in the frontal area, grittiness and intermittent foreign body sensation, redness and watering from both eyes. The condition worsened as the day progressed and was worse by evening. Her symptoms were relieved by keeping the eyes closed. She also had glare during the day time and in sunlight and also while using the computer screen. On examination, her visual acuity was 6/6 in both eyes. Lids and adnexa were normal. No evidence of any Meibomian gland dysfunction was noted. Regurgitation test was negative.

On ocular examination, dry spots were noticed on the corneal surface. Tear break up time was 3-4 seconds, Schirmir's {I} done was 20 mm in both eyes, tear meniscus height was normal. Fine epithelial punctate spots were noted with fluorescein dye. Tear meniscus showed fine debris. Fine papillae with inflamed bulbar and palpebra conjunctiva were also noted. Mild conjunctival injection was also observed. Anterior chamber, lens, vitreous and the fundus was normal.

The patient had computer vision syndrome and was treated with low dose ketorolac 0.4% tid along with preservative free carboxy methyl cellulose 0.5% w/v drops qid and s.o.s. She was explained that the height of the computer was to be adjusted 2-3 inch below the level of eyes, frequent voluntary blinking and 20-20-rule. She was advised to use antiglare glasses and shield for the computer.

On follow up, she improved markedly in the tested parameters and symptomatically too. She now follows the preventive measures to avoid computer vision syndrome.

Discussion

Computer vision syndrome is the emerging and worrisome ocular condition affecting both young and old equally due to increased usage of computer both at home and at work. There is a correlation between ocular symptoms such as pain, redness, dryness, blurring of vision, double vision and other head and neck sprains and computer usage. Prevention remains the main strategy in managing computer vision syndrome. Modification in the ergonomics of the working environment, patient education and proper eye care are important strategies in preventing computer vision syndrome.

The purpose of reporting this condition is to make people aware to not become slaves to the digital devices as these may impact our future generations in an irreversible and dangerous way.

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