Lockdown and eye health – a case of accommodative spasm

A 25-year-old male presented to the eye casualty with a one-day history of sudden onset worsening vision. More specifically, he noted his vision was more blurred than usual and this was more exaggerated for near-work than for distance-work. He was unable to do his normal work and had trouble focussing. There were no associated neurological symptoms and in particular no photophobia, ophthalmoplegia, diplopia or changes in colour vision. He has a past medical history of obsessive-compulsive disorder and takes Sertraline for this. He is a non-smoker, non-driver and denies recreational drug use. He last saw an optician three months ago and his current prescription is OD -5.0 and OS -5.5.

Cranial nerve examination was grossly intact and there was no relative-afferent-pupillary defect or visual field defects. On slit-lamp examination, there were no abnormalities detected of external eye structures, the cornea and lens were normal, and the anterior chamber had no abnormalities detected bilaterally. The optic discs in both eyes appeared healthy and peripheral retinal examination was normal with no tears or detachments.

His best corrected visual acuity was OD 6/9 and OS 6/6, with no improvement on pinhole examination in either eye. His intraocular pressure was OD 17mmHg and OS 14mmHg. Colour vision was normal on Ishihara testing (15/15). Optical coherence tomography (OCT) was done and revealed no abnormalities in the optic disc or macular region (Figure 1).

On closer questioning, the patient revealed that recently he had been doing more near-work than usual and reported a higher than usual screen-time on his phone and computers (due to increased pressure at work). Given the normal clinical examination and the recent history of increased screen-time and near work noted by the patient, he was diagnosed with accommodative spasm (AS). He was discharged with advice to avoid close work till vision regained. He was also encouraged to take regular breaks during work and to view things at a long-distance range (i.e., walking) to reset accommodation.

Discussion

Accommodative dysfunctions (Figure 2), including spasm of accommodation, have been linked with excessive use of electronic devices [1]. Accommodative spasm occurs when there is sustained involuntary accommodation in the absence of an accommodative stimulus [2]. Imaging studies looking at dynamic changes that occur in the anterior chamber during accommodation show that the anterior lens becomes more sharply curved and moves closer to the cornea resulting in a shallower anterior chamber depth [2]. There is also an anterior movement of the posterior lens surface which means that patients who are myopic become more myopic and hyperopic patients become less hyperopic.

Patients typically present with sudden worsening of vision, headaches, eye strain and difficulty concentrating [3]. The exact aetiology remains unknown, although it has been associated with several organic conditions including head trauma, inflammatory conditions such as multiple sclerosis and iatrogenic causes such as laser-assisted in situ keratomileusis [4]. More commonly, it can be the result of excessive strain and near-work which is the likely cause in this case. It has also been associated with emotional distress which may have also been a contributing factor in this case [5].

Several eye health problems have been associated with excessive gadget use including, dry eye disease (DED), digital eye strain and myopia progression, all of which may present with sudden worsening of vision [6-9]. There is increasing recognition of the impact that lockdown restrictions may have on eye health and the repercussions associated with increased screen time that come with working from home. Factors that contribute to eye health include closer working distance, smaller font size and altered blink pattern that are associated with gadget use [6]. Moreover, myopia is a growing concern worldwide with estimates that it may affect one in two people by 2050 [10]. Outdoor time has a protective effect on myopia and is also beneficial in preventing AS and DED [9,11]. Hence, there is a need to improve visual hygiene awareness amongst the general public in anticipation of the increasing role technology will have on our lives [11].

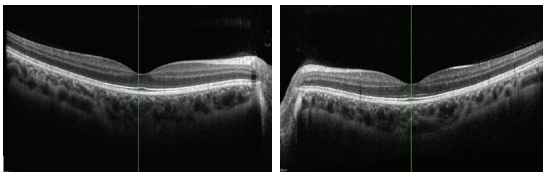

Figure 1: Optical coherence tomography scans of the right eye (OD) and the left eye (OS).

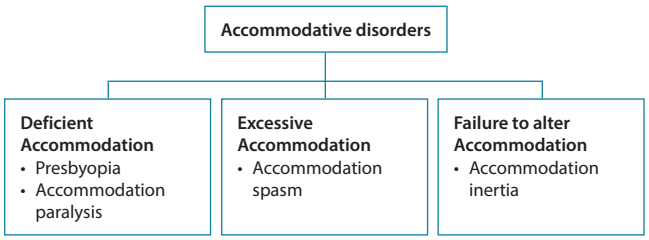

Figure 2: Summary of accommodative dysfunctions.

In addition, this case demonstrates the need for a full and complete history using a patient-centred focus. Implementation of eliciting patient's ideas, concerns and expectations (ICE) is an integral part of history taking for several reasons [12-14]. Most importantly, it facilitates open communication by enhancing the doctor-patient relationship. From the physician's perspective, this greatly aids establishing the correct diagnosis as patients feel more empowered to reveal clinically relevant information. Similarly, patients will be involved in the decision-making process which will improve compliance with advice and treatment.

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