Nicotine Replacement Therapy Associated with Persistence of Subretinal Fluid in a Case of Choroidal Neovascularization in Central Serous Chorioretinopathy

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ABSTRACT
We present a patient with central serous chorioretinopathy (CSCR) associated choroidal neovascularization (CNV), who received multiple ranibizumab injections. The patient showed initial improvement with the therapy after which there was an increase in macular thickness. On reviewing his systemic history it was noted that he had been recently put on nicotine replacement therapy (NRT). On stopping the NRT the serous retinal detachment resolved and vision improved. NRT causing nonresolution of CSCR, to our knowledge, has not been described previously. Although there was no definitive proof it was strongly suspected to be the causative factor. Physicians advising NRT with Nicotine Polacrilex chewing gum should be aware of its possible ocular side effects.

Keywords: Nicotine replacement therapy, Choroidal neovascularization, Central serous chorioretinopathy.

INTRODUCTION
Central serous chorioretinopathy (CSCR) is an idiopathic condition which most commonly presents with detachment of the neurosensory retina secondary to leakage at the level of the retinal pigment epithelium.

It is generally a benign disease with a favorable prognosis. Choroidal neovascularization (CNV) is a rare complication in CSCR, and is associated with a poor prognosis.1

Photodynamic therapy with verteporfin has been described as a safe and well-tolerated option for treating the CNV.2 Bevacizumab has been described as leading to visual as well as anatomical improvement in these eyes.3

We describe a patient with CSCR associated CNV, who received multiple ranibizumab injections. Initially, the patient showed signs of improvement but soon after, an increase in macular thickness was observed. On reviewing his systemic history we found that he had been put on nicotine replacement therapy. This, we feel, could have led to an increase in the serous retinal detachment and decreased vision.

CASE REPORT
A 59-year-old gentleman was experiencing hazy vision in the left eye for two days. The patient was a smoker. Otherwise his systemic history was unremarkable. His best corrected visual acuity (BCVA) was 6/5, N5 in the right eye and 6/12, N10 in the left eye. Anterior segment examination was within normal limits. The intraocular pressure was 20 mm Hg in both eyes.

A fundus examination revealed RPE alterations in the right eye. The left eye showed fluid at the posterior pole and a lesion suggestive of a choroidal neovascular membrane inferotemporal to the fovea. Fundus fluorescein angiography (FFA), performed the previous day elsewhere, showed a choroidal neovascular membrane (CNVM) with early lacy pattern of fluorescence and late leakage, inferotemporal to fixation. RPE window defects were also noted (Figs 1A and B). An optical coherence tomography (OCT) scan was performed which revealed a neurosensory detachment (NSD) with underlying CNV abutting the fixation point (Fig. 2A).

He was advised and given injection ranibizumab (0.5 mg in 0.05 ml).

At follow-up, a month later, the patient felt that his vision had improved in the left eye. BCVA in OS was 6/5, N8. OCT still showed the presence of subretinal fluid (SRF) (Fig. 2B) and he received two more injections at monthly intervals. At the third month, BCVA improved to 6/5, N5. FFA no longer showed a leaking membrane (Fig. 3), though SRF was still noted on the OCT. It was decided to observe him. He was advised to reduce smoking. After a month, the patient complained of an increased central scotoma in the left eye. OCT at this stage revealed that the central foveal thickness had increased by 73 microns compared to the previous scan (Fig. 2C).

On interrogation, we found that the patient was using Nicotine Polacrilex (4 mg) chewing gum as nicotine replacement therapy (NRT) four to five times a day, since his last visit. In view of the scotoma and visual deterioration, he was advised to stop using the NRT. At the subsequent follow-up visits, the central macular thickness kept decreasing and was normalized at the last visit (Fig. 2D), 4 months after cessation of the NRT.
Daraius Shroff et al

Figs 1A and B: Show early and late phases of the FFA at presentation, showing a CNVM inferotemporal to fixation, having an early lacy pattern and increased hyperfluorescence in late stages. Multiple RPE window defects are also seen in late stages.

Figs 2A to D: (A) OCT scan at presentation showed a neurosensory detachment with underlying CNVM abutting fixation, (B) OCT at 1 month showing persistence of SRF, (C) OCT at 4 months after 3 Lucentis injections showed an increase in central foveal thickness, (D) OCT scan taken 4 months after abstaining from use of NRT shows the resolution of the NSD.

Fig. 3: FFA at 3 months follow-up shows absence of leakage and only areas of staining indicating inactivation of the CNVM.

DISCUSSION
The exact mechanism of development of CNV in CSCR is not known. Chronic decomposition at the RPE-Bruch membrane complex with ischemia at the level of choriocapillaris could have a causative role.4

On FFA, features of CNV in CSCR are a well-delineated hyperfluorescent lesion in early phase with profuse and intense leakage in the late phase, this was seen in our case.2

Increased sympathetic activities as well as vasoconstrictors like epinephrine, have been implicated in CSCR. Experimentally, a picture similar to CSCR has been produced by intravenous epinephrine injections in the eyes of monkeys.5

Nicotine replacement therapy with polacrilex chewing gum is known to have several adverse effects due to its vasoconstrictor effects.6 These include increased heart rate, a rise in blood pressure, muscle aches and vertigo.

NRT causing non-resolution of CSCR has, to our knowledge, not been described previously. Although the cause and affect relationship between use of NRT and the non-resolution of retinal thickening with bevacizumab cannot be established, the sequence of events clearly indicate to that possibility. Physicians advising NRT with Nicotine Polacrilex chewing gum should be aware of this potentially possible ocular side effect.
REFERENCES