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Short communication

Central retinal artery occlusion with concomitant ipsilateral cerebral infarction after cosmetic facial injections

Jeong-Ho Hong [a,1], Seong Joon Ahn [b,1], Se Joon Woo [b], Cheolkyu Jung [c], Jun Young Chang [d], Jin-Heon Chung [d], Moon-Ku Han [d,*]

[a] Department of Neurology, Keimyung University Dongsan Medical Center, Daegu, Republic of Korea
[b] Department of Ophthalmology, Seoul National University Bundang Hospital, Seongnam, Republic of Korea
[c] Department of Radiology, Seoul National University Bundang Hospital, Seongnam, Republic of Korea
[d] Department of Neurology, Seoul National University Bundang Hospital, Seongnam, Republic of Korea

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ABSTRACT

We report 2 cases of central retinal artery occlusion with concomitant ipsilateral cerebral infarction after cosmetic facial injections and a literature review. The 2 patients were two healthy women, in which cosmetic facial injections with autologous fat and filler were performed, respectively. The patients had no light perception at the final visit and their conditions led to memory retrieval disturbance in case 1 and right arm weakness, dysarthria, facial palsy, and ophthalmoplegia in case 2. Neuroimaging showed multifocal small infarctions in the ipsilateral frontal lobe with occlusion of the ophthalmic artery in case 1 and multiple infarctions in the ipsilateral anterior and middle cerebral artery territories with subsequent hemorrhagic transformation in case 2. Poor visual prognosis and neurological complications can occur in healthy adults undergoing cosmetic facial injection, and all patients should be informed of this risk before the procedure.

1. Introduction

Facial autologous fat injections for esthetic soft-tissue augmentation are becoming popular. Hyaluronic acid filler is also becoming a material of choice in cosmetic soft-tissue correction. Although cosmetic facial injections of autologous fat or hyaluronic acid filler are considered safe, post-procedural retinal and ophthalmic artery occlusion and facial skin damage have been reported [1–8]. In previous cases, central retinal artery occlusion (CRAO), an ocular vascular occlusive disorder that leads to permanent vision loss, occurred in healthy patients.

We report 2 cases that experienced concomitant ipsilateral cerebral infarction and CRAO after cosmetic facial injections and conducted a systematic review of related literature. Retinal and cerebral parenchymal abnormalities were investigated using optical coherence tomography (OCT) and magnetic resonance imaging (MRI).

2. Case reports

2.1. Case 1

A 27-year-old woman presented with vision loss in the left eye immediately after autologous fat injection performed under local anesthesia. She had received an autologous fat injection into her glabella, forehead, and cheeks for cosmetic purposes. During the injection, she had experienced sudden, severe periocular pain. Her consciousness was normal, and brief neurologic examinations in the emergency room were not remarkable.

Her vision was 20/20 in the right eye, but she had no light perception in the left eye. Ocular examination showed a dilated pupil without light reflex in the left eye. Ophthalmoplegia was not noted. Fundoscopic examination of the affected eye showed retinal whitening with arteriolar narrowing (Fig. 1A), but fat emboli were not identifiable. Fundus fluorescein angiography (FA) showed significant delay of retinal arterial perfusion (Fig. 1B), and OCT showed inner retinal edema in the left eye compatible with typical CRAO (Fig. 1C).

Abbreviations: CRAO, central retinal artery occlusion; OCT, optical coherence tomography; MRI, magnetic resonance imaging; FA, fluorescein angiography; MRA, magnetic resonance angiography; MRC, Medical Research Council.

* Corresponding author at: Department of Neurology, Seoul National University Bundang Hospital, Seoul National University College of Medicine, 300 Gumi-dong, Bundang-gu, Seongnam-si, Gyeonggi-do 463-707, Republic of Korea. Tel.: +82 31 787 7464; fax: +82 31 787 4059.
E-mail address: mkhan@snu.ac.kr (M.-K. Han).

[1] The authors contributed equally to this work.

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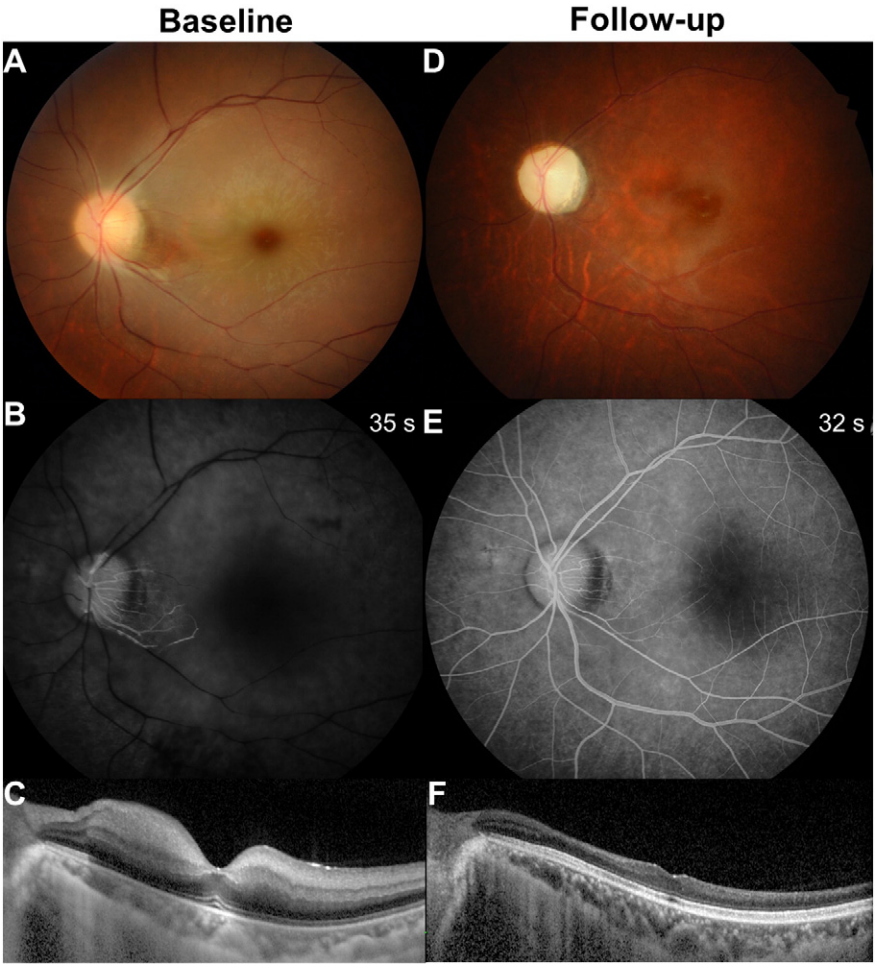

Fig. 1. Case 1 with central retinal artery occlusion after autologous fat injection at baseline (A–C) and at the 1-year follow-up examination (D–F). A and D, Fundus photographs show retinal whitening with cherry red spot at baseline and a pale disc at follow-up examination. B and E, Fluorescein angiographs show remarkably delayed retinal perfusion at baseline and improved perfusion at the follow-up examination. Text in the upper right corner indicates the time at which images were taken. C and F, Optical coherence tomography images demonstrate inner retinal edema at baseline, which subsequently underwent atrophic changes. At the follow-up examination, the retina is thin and the layer-by-layer structure is indefinite, especially in the inner retinal layers.

Diffusion-weighted brain imaging showed multifocal small acute infarctions in the left frontal lobe (Fig. 2A). Magnetic resonance angiography (MRA) revealed occlusion of the left ophthalmic artery (arrows, Fig. 2B).

On admission, she complained of short-term memory disturbance and naming difficulty, which was assessed as memory retrieval disturbance by neuropsychological screening battery.

At the 1-year follow-up visit, the patient's vision had not improved. The follow-up fundus photography revealed a pale optic disc and diffuse retinal atrophy with arteriolar narrowing (Fig. 1D). Retinal arterial perfusion was restored on FA (Fig. 1E), but significant inner retinal thinning was observed on OCT (Fig. 1F). Neurologic deficits had improved mildly but were still present.

2.2. Case 2

A 50-year-old woman who previously had normal vision in both eyes presented with vision loss in the left eye and right arm weakness 1 day after facial filler (hyaluronic acid) injection into her glabella and cheeks. Her neurologic examination revealed dysarthria and facial palsy on the right side. Her right upper extremity showed Medical Research Council (MRC) grade 1, and her lower limb showed MRC grade 4.

Her vision was 20/20 in the right eye and no light perception in the left eye. Conjunctival injection, cataract, and diffuse corneal stromal edema in the left eye were also noted. The corneal edema and cataract in the left eye obscured the fundoscopic view. The superior retina was visible only on FA, which revealed retinal and choroidal perfusion delay, compatible with CRAO. Ptosis in the left eye and left exotropia of 35-prism diopter were observed using the Krimsky method. Near-total ophthalmoplegia (limitation of adduction, elevation, and depression and mild limitation of abduction) was found in the left eye.

An initial outside MRI revealed multiple small acute infarctions in the left anterior and middle cerebral artery territories without hemorrhagic transformation (Fig. 2C–D). However, at a 2-week follow-up examination, MRI showed hemorrhagic transformation in the infarcted area (Fig. 2E–F).

Two months later, she had no light perception in the left eye. Her ophthalmoplegia in the left eye resolved, but showed a mild limitation of elevation. Conjunctival injection and corneal edema resolved. However, the cataract in the left eye had progressed, and the view of the fundus was occluded by the cataract. At 6 months, she was able to walk without assistance but required some help because of moderate disability of her upper limb (MRC grade 3).

3. Discussion

We report the clinical manifestations, angiographic features, retinal and brain parenchymal changes, and final visual and neurologic outcomes in 2 cases of combined CRAO and ipsilateral cerebral ischemia after cosmetic facial injections of fillers. The 2 patients were healthy