

Sudden Visual Loss Following Cosmetic Poly-(L)-Lactic Acid Injection into the Forehead: A Case Report

Yu-Chieh Wu, Keng-Hung Lin, Ying-Cheng Shen and Li-Chen Wei*

Department of Ophthalmology, Taichung Veterans General Hospital, Taichung, Taiwan

*Corresponding author: Li-Chen Wei, Department of Ophthalmology, Taichung Veterans General Hospital, 1650 Taiwan Boulevard Sector-4, Taichung City 40705, Taiwan, Tel:886-4-2359-2525; E-mail: lichen5883@yahoo.com.tw

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Abstract

An increasing number of people are pursuing aesthetic enhancement and rejuvenation by means of facial filler injections. We report a rare case of a 28-year-old female with blindness and partial ophthalmoplegia of the left eye following subcutaneous injection in the forehead with filler poly-(L)-lactic acid, which has not been reported previously. The patient suffered from sharp pain and then blurred vision immediately after the injections. The patient had permanent vision loss despite immediate ophthalmological intervention and comprehensive therapy with heparin infusion, systemic corticosteroid treatment and hyperbaric therapy. Clinicians and patients should be aware of the risk of iatrogenic artery occlusion associated with facial fillers and that immediate treatment is paramount in such an event in order to reduce the likelihood of devastating consequences.

Keywords: Visual loss; Blindness; Facial fillers; Poly-(L)-lactic acid

Introduction

These days an increasing number of people are opting for aesthetic enhancement treatment and rejuvenation by means of facial filler injections. Here, it is reported a rare case of a 28-year-old female with blindness and partial ophthalmoplegia of the left eye following subcutaneous injection in the forehead with filler poly-(L)-lactic acid, which has not been reported previously.

Case Presentation

A healthy 28-year-old female was referred to our department from the emergency room about two hours after receiving a treatment applied to the forehead using poly-L-lactic acid (PLLA) subcutaneous filler (Sculptra, Valeant Aesthetics, Bridgewater, New Jersey) at a private clinic. She experienced total loss of vision of her left eye, along with ocular pain, dizziness, nausea, and headache immediately following the injection.

On examination, her best corrected visual acuity was 0.6 Snellen in the right eye and no light perception in the left eye. The patient also had blepharoptosis, a dilated pupil, as well as limitations of extraocular movement with restricted medial, up and down gaze, and exotropia in the left eye. Discoloration was noted on the forehead which extended to the left upper eyelid in a reticular pattern (Figure 1).

An orbital computed tomography scan was performed and the results were normal. Complete blood count, electrolytes, and coagulation profile were all unremarkable. Fundus photograph showed diffuse retinal edema, multiple segmented retinal arteries, and severely narrowed veins (Figure 2).

Ocular massage and oral acetazolamide were initially administered. The patient then received an infusion of heparin and alprostadil, a synthetic variant of prostaglandin E1 which causes vasodilatation, as well as systemic steroid pulse therapy for 3 days, and hyperbaric

oxygen therapy for 4 days. The patient had partial improvement of ocular movements and ptosis of the left eye 5 days later. Fundus photograph on the fifth day after injection showed improved retinal artery perfusion (Figure 3), but her vision remained no light perception.



Figure 1: Facial photograph at presentation. Puncture wounds in the forehead for squeezing out fillers, reticular discoloration on the left forehead and left upper eyelid, ptosis and left eye exotropia, revealing third nerve palsy.

Discussion

An increasing number of people are pursuing aesthetic enhancement and rejuvenation by means of facial filler injections. PLLA is one of the most commonly used subcutaneous fillers. It was FDA-approved in 2004 for use in the treatment of HIV-associated lipodystrophy. Common adverse effects of injection include discomfort, ecchymosis, erythema, edema, and the development of

papules or nodules [1-4]. The most feared complication is blindness caused by occlusion of the ophthalmic and/or retinal artery.



Figure 2: Fundus color picture at presentation. Diffuse retinal whitening, edema, and segmented retinal arteries. The macular pallor is caused by retinal edema.



Figure 3: Fundus color picture 5 days after injury. Increased perfusion of retinal arteries and veins of the left eye, and improved retinal edema 5 days after injury.

In our case, the patient had partial improvement of ocular movements and ptosis of the left eye 5 days later, but her vision remained no light perception despite improved retinal perfusion on fundus examination. This is consistent with previous studies that showed although vision recovery was rare, ophthalmoplegia and ptosis

recovered in the majority of cases [5-7]. These phenomena are likely due to the fact that nerves and muscles regenerate after vascular compromise, whereas retinal damage is irreversible after 60-90 minutes [8,9].

According to previous reports, the most common types of filler that caused vision changes were autologous fat and hyaluronic acid because of larger particle size than PLLA [6,7]. The most common sites for this complication were the glabella, nasal region, nasolabial fold, and forehead. We searched the literature and found three cases of visual loss and orbital ischemia after PLLA injections. One case had CRAO after injections in the periorbital and lateral nasal area [5]. Another received injections in the eyelid, causing generalized posterior ciliary artery occlusion. The other patient had injections in the glabella, leading to localized posterior ciliary artery occlusion [6]. In the present case, the patient received injections in the forehead. Although the forehead is a common site for vision loss after filler injections, blindness after PLLA injections in the forehead has not been reported.

Many researchers have proposed that arterial occlusion is caused by retrograde embolic mechanisms [3,4,8]. The particle sizes of fillers (PLLA: 40 to 63 μm) are several times larger than the caliber of the capillary loop vessels in dermal papules [10]. Therefore, intra-arterial injection would certainly cause obstruction. The arteries most likely to develop complications secondary to soft tissue augmentation in the glabellar and regions are the supratrochlear and supraorbital arteries. They both become more superficial as they travel superiorly above the supraorbital rim. The supratrochlear artery runs along the medial canthal vertical line, within 5 mm lateral or medial from this vertical line. The supraorbital artery appears over the supraorbital rim on a vertical line corresponding to the medial limbus of the cornea [6,8,11,12]. As a result, injections at the glabella or inferior forehead at the level of the supraorbital rim or within 2 cm of that location should be superficial. Conversely, injections on the forehead should be deep to avoid intravascular injection.

Conclusion

In conclusion, retinal artery occlusion can occur after cosmetic facial filler injections. Patients should be informed about the risk of irreversible blindness from retinal artery occlusion, and the injections should be performed with extreme care. The treatment of iatrogenic embolic blindness is usually unsuccessful because of the short recovery time after sustained hypoxia. Therefore, prevention is of paramount importance.

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