Case report

Central retinal artery occlusion and brain infarctions after nasal filler injection

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Learning Point for Clinicians

Facial filler injection has become more common in cosmetic interventions. Severe adverse effects like central retinal artery occlusion or brain infarction can happen. This is a reminder of adverse effects that not only have poor prognosis but also severely impact on the quality of life, especially in the healthy population.

A 25-year-old girl who had been previously healthy consulted for right visual acuity loss after a nasal filler injection of hyaluronic acid about 3 h prior to consult. She felt severe ocular pain, nausea and dizziness shortly after receiving the nasal injection. Physical examination revealed clear consciousness, stable vital signs, mild redness with ecchymosis over the nasal and glabellar region, and right eye ptosis, with no light reflex of the right eye. Examination of the fundus showed right retinal attachment with diminished blood vasculature, presence of cherry spot and retinal edema, compatible with central retinal artery occlusion (CRAO). However, her left upper limb muscle power decreased and muscle power score was 4 about 8 h later. Brain magnetic resonance imaging showed multiple small acute infarcts over the bilateral hemisphere but mainly in the middle cerebral artery territory, with decreased right ophthalmic artery flow (Figure 1).

An increasing number of people are pursuing aesthetic enhancement and rejuvenation by means of artificial procedures. Facial filler injections are rapid, easy and relatively safe. They have become popular in recent years and are considered acceptable by the general population. The associated adverse effects include both allergic and nonallergic effects, although there is less risk of an allergic reaction because hyaluronic acid has no species specificity. Minimal nonallergic effects such as pain, bruising or local swelling are frequently reported but recovery is relatively easy and does not require any treatment. Nonetheless, there are documented cases of rare severe adverse effects, including blindness and infarction¹ that lead to devastating consequences with only partial recovery despite invasive treatment like intra-arterial thrombolysis and long-term follow-up.²

The common risk factors of CRAO include thrombotic embolus, calcified or cholesterol embolus, and inflammatory reaction associated with vasculitis. The incidence of CRAO is about 1:100 000. Proper diagnosis relies on information obtained from clinical history and ocular examination, which includes fundoscopy and fluorescein angiography. Fluorescein angiography showing delayed filling or occlusion during the arterial phase, as well as prolonged choroidal filling with the presence of a cherry red spot, are warning signs of ophthalmic artery occlusion.³ The face has abundant vessels and, hence, it is possible for local subcutaneous injection pressure to be increased enough to reverse the flow of the filler into the ophthalmic artery and then into the internal carotid artery. Furthermore, functional anastomoses between the
internal and external arteries make it possible for the filler to form a brain infarction. Based on these mechanisms, the present case can be explained as the retrograde flow from the facial angular artery and lateral nasal artery into the dorsal nasal artery from the ophthalmic artery.

There are various available treatment options for CRAO, including massaging the affected eye, reducing the intraocular pressure using mannitol or acetazolamide, and using thrombolytic agents. Park et al. have demonstrated 44 cases of iatrogenic occlusion of the ophthalmic artery and up to 60% of those patients were diffuse occlusion-like ophthalmic artery occlusion, generalized posterior ciliary artery occlusion, and CRAO, which has the worst visual prognosis. This case is a reminder for clinicians of the care needed when performing facial filler injections.

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References