

PURTSCHER-LIKE RETINOPATHY AND PARACENTRAL ACUTE MIDDLE MACULOPATHY CAUSED BY INDUSTRIAL SILICONE EMBOLISM

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Purpose: This article describes a rare occurrence of acute vision loss in a healthy young patient after a cosmetic procedure.

Methods: Findings on clinical examination, color fundus photography, and swept-source optical coherence tomography angiography.

Results: A previously healthy 26-year-old male-to-female transsexual presented with dyspnea, fever, and hypoxemia 1 day after cosmetic injection of industrial silicone for buttock augmentation. The patient reported decreased vision on the right eye 4 days later and decreased vision on the left eye 5 days later. Fundus examination revealed bilateral retinal precapillary occlusion, demonstrating intraretinal hemorrhages, cotton wool spots, and Purtscher flecks within the posterior pole of both eyes. Optical coherence tomography angiography revealed capillary ischemia and an enlarged foveal avascular zone.

Conclusion: Swept-source optical coherence tomography is a valuable tool for evaluation of Purtscher-like retinopathy and paracentral acute middle maculopathy.

RETINAL CASES & BRIEF REPORTS 16:372–374, 2022

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Silicone is a liquid polymer (polydimethylsiloxane) that has long been considered an inert substance, durable, and is a component in many types of implant-

able medical devices.¹ Although silicone implants are approved for use in cosmetic breast augmentation, injectable liquid silicone for aesthetic surgery has been shown to have significant potential morbidity and is now illegal.^{1,2} Board-certified plastic surgeons do not routinely practice liquid silicone injections, but there is a growing trend of underground cosmetic surgery events,² where patients undergo a series of injections of liquid silicone by unlicensed personnel.

There have been case reports of pulmonary and neurologic sequelae to such procedures, some of which were ultimately fatal. Cases of silicone embolism syndrome have been described in the past years.^{1,2}

We now describe a rare case of bilateral acute vision loss after cosmetic injection of industrial silicone for buttock augmentation.

Case Report

A 26-year-old male-to-female transsexual with an unremarkable medical history presented to our emergency department with an 11-day

None of the authors has any financial/conflicting interests to disclose.

The authors guarantee patient anonymity. The case report was approved by the local ethics committee.

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history of shortness of breath, cough, and chest pain, 1 day after cosmetic injection of industrial silicone for buttock augmentation.

She received injections of an unknown volume of silicone fluid in both thighs and buttocks one day before the onset of symptoms and 11 days before search medical assistance. She reported use of marijuana cigarettes sporadically and denied use of any other drugs or medications and denied any comorbidity and previous surgery.

At the first clinical evaluation in the emergency room, she was afebrile, normotensive but tachycardic (143 beats per minute), tachpneic (32 breaths per minute), and with a saturation of 74% on room air. Her lungs were clear to auscultation. Electrocardiogram was performed with no significant findings. She was admitted to the medical intensive care unit for dyspnea, and a chest tomography was performed.

The medical intensive care unit team made a presumptive diagnosis of silicone embolism syndrome. The patient was treated with supportive care, including supplemental oxygen, antibiotics, and IV methylprednisolone. Because of concern for risk of paradoxical cerebral emboli, an echocardiogram was performed, which was normal.

On hospital day 6, the patient's respiratory status steadily improved, and the patient was sent for ophthalmologic evaluation

due to a complaint of decreased visual acuity in both eyes that was started 4 days after the procedure on the right eye and 5 days after on the left eye.

The best-corrected visual acuity was 20/32 (0.20 logMAR) in the right eye and 20/63 (0.50 logMAR) in the left eye. Dilated fundoscopic examination revealed multiple cotton wool spots, intraretinal hemorrhages, and Purtscher flecks (Figure 1).

Discussion

Purtscher-like retinopathy is a rare cause of acute bilateral vision loss, as a result of occlusion of retinal precapillary arterioles. There are multiple theories about the mechanisms of lesions. Microembolization secondary to fat, air, leukocytes, platelets, and fibrin were all considered as possible causes.³ In the present case, it is possible to determine an ischemic insult to retinal deep capillary plexus, as seen in multimodal

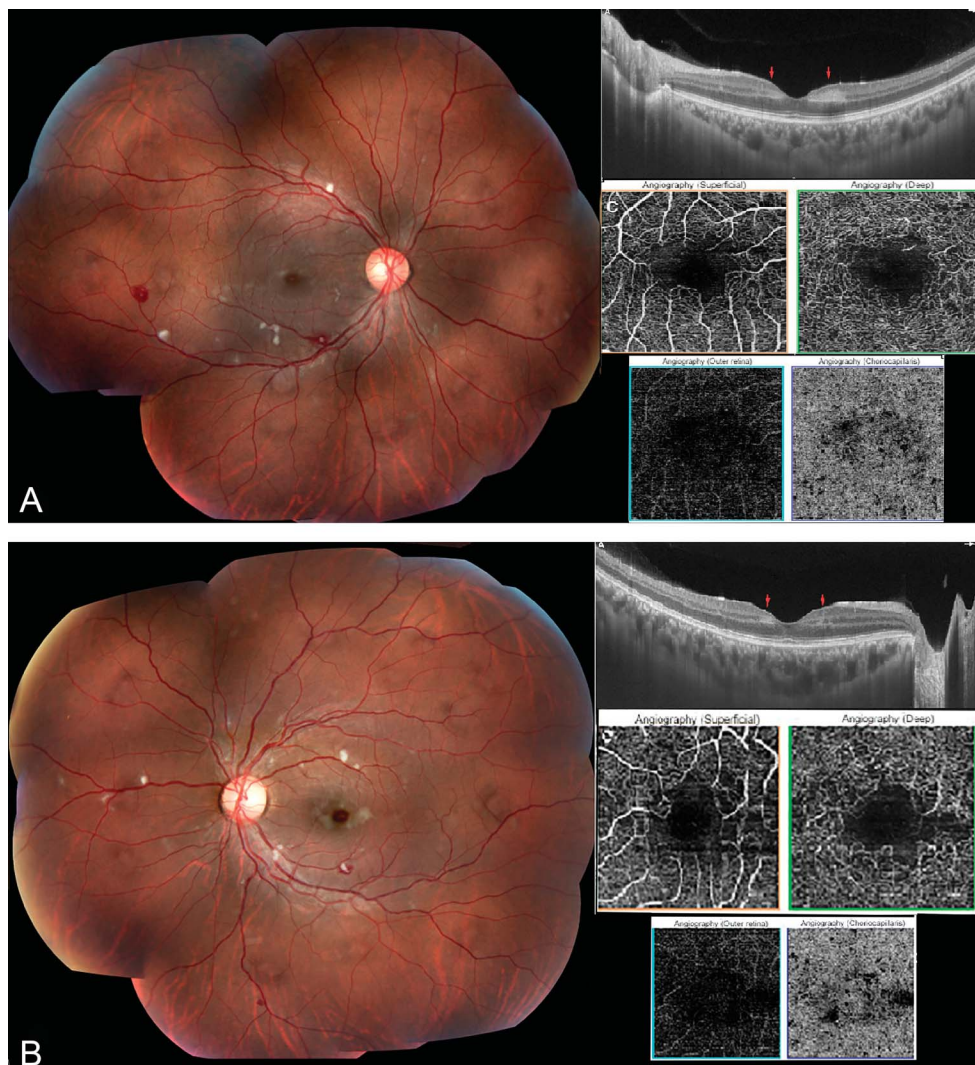


Fig. 1. A and B. Fundus photography, OCT, and OCT angiography at the time of presentation with multiple cotton wool spots and intraretinal hemorrhages in the posterior pole. Purtscher flecks are also visible around the fovea. The red dots in OCT scan indicated hyperreflective bands in inner layers corresponding to bilateral paracentral acute middle maculopathy. OCT angiography maps of superficial and deep plexus revealed an enlarged foveal avascular zone in both eyes with retinal capillary ischemia.

images. We hypothesize that this condition not only include a direct microembolization of industrial silicone but also a more complex microembolization phenomenon of leukocytes aggregates, complement factors, and clotting cascade activation to be the pathophysiology features of this condition. This is a more reasonable theory because this condition resembles an immunological event associated with Purtscher-like retinopathy because many other inflammatory, traumatic, and immunological conditions are related with this entity.^{3,4} As seen in Figure 1, optical coherence tomography (OCT) angiography is able to determine retinal capillary ischemia with perifoveal hyperreflective plaques in the outer plexiform layer, inner nuclear layer, and inner plexiform layer that correspond to paracentral acute middle maculopathy and coexisting Purtscher-like retinopathy.^{5–8} Angiography map of OCT angiography revealed an enlarged foveal avascular zone.

The finding of Purtscher flecks is pathognomonic and is reported to be presented in 50% of the cases. The characteristic feature is intraretinal whitening lesions that could correspond to the hyperreflective plaques in OCT scan. Also, intraretinal hemorrhages and cotton wool spots spread the posterior pole are common findings. Fluorescein angiography could show leakage and occlusion of arterioles, depending on the severity of the case.^{3,4}

Illicit cosmetic injections are not unusual procedures, and complications are well known and described, including local and systemic adverse events. One recent report estimated that 49% of transsexual population in São Paulo, Brazil, performed illegal industrial silicone injections.⁹ Pulmonary effects secondary to microembolism are the most common and serious systemic complications, with potential of death. Acute visual loss is a rare event, described by Huang et al¹⁰ in a case report related to an unknown component of buttock injection. Khatibi⁵

report a Purtscher-like retinopathy secondary to PMMA injection. To the best of the authors' knowledge, this is the first documented case of diffuse alveolar hemorrhage and ischemic bilateral vision loss in a patient undergoing gluteal augmentation with industrial silicone.

Key words: embolism, ischemia, Purtscher retinopathy, retinal hemorrhage, silicone.

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