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Case Letter

A rare case of herpes zoster ophthalmicus after photodynamic therapy

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Dear Editors:

Topical photodynamic therapy (PDT) is frequently used in dermatology to treat actinic keratoses (AKs) and superficial non-melanoma skin cancers (Ibbotson et al., 2019). Herein, we present an extremely rare case of herpes zoster ophthalmicus (HZO) after PDT.

An 80-year-old male patient with a history of hypertension and recurrent blood clots underwent PDT for AKs. His scalp and forehead were treated with microdermabrasion, incubated with aminolevulinic acid hydrochloride for 2 hours, and subsequently treated with blue light for 16 minutes and 40 seconds. The patient tolerated treatment well. One week after therapy, he developed a right-sided headache. Five days later, he reported drooping and tearing of the right eye and a painful, punctate lesion with overlying crust above the right eyebrow. He had not been vaccinated for shingles, but reported having chickenpox as a child. He presented to the emergency department and was febrile to 100.8°F. He had diffuse erythema, edema, and vesicles at various stages of healing on his right forehead, tip of the nose, and right upper eyelid that stopped sharply at the midline (Fig. 1). The patient was diagnosed with HZO and prescribed oral valacyclovir 1 g thrice daily. At the follow-up visits, he was diagnosed with HZO uveitis and started on prednisolone eye drops six times daily. One month after initial presentation, he developed diplopia secondary to cranial nerve (CN) 6 palsy. Three months later, the patient reported significant improvement in diplopia and complete resolution of the HZO symptoms.

HZO, which is caused by a reactivation of the varicella zoster virus in the ophthalmic branch of the trigeminal nerve, is most commonly seen in elderly and immunocompromised patients (Schmidgal and Storie, 2020). The reactivation may be triggered by a number of factors, including illness, stress, and mechanical injury (Schmidgal and Storie, 2020). HZ of the cranial nerves is more likely to be associated with trauma than HZ of other body locations (Schmidgal and Storie, 2020). HZ has only been described as an adverse effect of PDT twice to date (Manno and Cohen, 2017;

Wolfsen and Ng, 2002). In one case, a man with non-Hodgkin's lymphoma developed HZ of the ophthalmic branch of the trigeminal nerve after PDT for AKs, but did not display ocular symptoms or a CN palsy (Manno and Cohen, 2017). In the second case, a woman who received PDT for mucosal adenocarcinoma developed HZ of the thoracic wall (Wolfsen and Ng, 2002).

PDT uses light to activate a photosensitizing agent. This causes the formation of reactive oxygen species that oxidize essential cellular components, leading to apoptosis and cell necrosis. Although PDT is generally well-tolerated by patients, common complications include pain and inflammation at the treatment site (Ibbotson et al., 2019). The patient presented herein developed HZO shortly after PDT treatment for AKs. Additionally, he developed a CN 6 palsy. CN palsies occur in 7% to 31% of patients with HZO (Chaker et al., 2014). Although rare, this case highlights that PDT may trigger HZO. Providers using PDT should be aware of this risk and counsel patients appropriately. Additionally, vaccination with the recombinant zoster vaccine is highly effective, preventing HZ in >90% of cases. For patients with existing risk factors for HZ, such as advanced age or immunocompromised status, vaccination for HZ may be prudent prior to treatment with PDT.

For patients with a history of herpes labialis, the PDT protocol followed at our institution recommends a 10 day course of oral valacyclovir 500 mg twice daily, beginning 24 hours prior to the procedure. Our patient did not have a history of herpes simplex and therefore, was not treated with antiviral prophylaxis. There is literature that shows that similar anti viral dosing can prevent herpes zoster in patients with HIV and lymphoma patients (Barnabas et al., 2016; Sandherr et al., 2015). Perhaps the not infrequent use of HSV prophylaxis in PDT regimens is the reason that additional cases of zoster provoked by PDT have not been reported. In addition to shingles vaccination, oral antiviral prophylaxis should be considered for all patients receiving PDT regardless of herpes labialis history.

Conflict of interest

None.

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Fig. 1. Erythema and crusting of the right forehead that stopped sharply at the midline.

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Study Approval

The author(s) confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies.

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