Case Report

Visual Loss Following Cranial Radiotherapy to Treat a Pituitary Tumor

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Abstract

A patient was referred to the Basir Eye Clinic in Tehran, Iran, for a visual evoked potential exam. He was a 35-year-old man with light perception in his right eye and no light perception in his left eye. The patient's history indicated that he underwent adenomectomy and cranial radiotherapy to treat a pituitary tumor. Six months after radiotherapy, he lost his vision. The patient was diagnosed with radiation-induced optic neuropathy leading to blindness.

Keywords: Visual Loss; Cranial; Radiotherapy; Pituitary; Tumor.

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Introduction

Apart from individuals who are born blind, the leading causes of blindness are age-related macular degeneration, cataracts, diabetic retinopathy, and glaucoma [1]. Aside from these primary causes of blindness, in very rare cases, blindness can be caused by therapeutic measures for other diseases or as a result of adverse side effects of medications [2-4].

One therapeutic measure that has been reported to cause ophthalmic side effects and, in rare cases, blindness is radiotherapy [5]. Radiation-induced ocular morbidities might range from as negligible as transient eyelid erythema to as serious as complete loss of vision [6]. Ocular side effects of radiotherapy may occur either as a direct result of irradiation for intraocular tumors or when the eye is within the entrance or exit beam of radiation used for the treatment of other tissues in the head and neck area [6].

Considering the rarity of blindness caused by radiation therapy, we decided to report our case to emphasize the importance of being vigilant about the ophthalmic side effects of this treatment modality.

Case report

A 35-year-old man with severe visual loss, i.e., light perception (LP) in the right eye and no light perception (NLP) in the left eye, was referred to Basir Eye Clinic, Tehran, Iran, for visual evoked potential (VEP) recording. The patient provided written consent for reporting his case.

Due to the condition of the patient's eyes, he underwent flash-type VEP testing, during which no discernible Peak P100 was observed in the VEP recording. The medical history of the patient revealed that he had a pituitary tumor and subsequently underwent adenomectomy. Later, the patient underwent further treatment with cranial radiotherapy. Although the patient initially recovered from symptoms, after six months, he experienced a sudden loss of eyesight within a day or two. The patient underwent investigation of his visual system, and after a complete examination, radiation-induced optic neuropathy (RION) was diagnosed.

Discussion

The reported patient in the present case report lost his vision after adenomectomy and cranial radiotherapy to treat a pituitary tumor. Our final diagnosis for the patient was RION.

In a similar case report, Aldrees et al., [5] reported a 68-year-old woman who presented with profound vision loss of 2 months' duration in the right eye and 1 week's duration in the left eye. This occurred in the context of a craniopharyngioma that was twice resected and irradiated 9 months before her presentation. Ophthalmological examination revealed hand motion vision in the right eye and light perception vision in the left eye. A full examination of the patient using different diagnostic techniques resulted in the diagnosis of RION. Despite treatment with high-dose intravenous corticosteroids, 19 sessions of hyperbaric oxygen therapy, and 3 doses of intravenous bevacizumab, her vision worsened to no light perception in both eyes [6].

In another case, Sandstrom et al., [7] reported a 60-year-old black woman with a central nervous system WHO grade 2 meningioma who received c radiation therapy with a proton beam to the residual tumor and resection cavity after near-total resection. The patient subsequently developed RION with vision loss and hallucinations. The authors recommended that even though the incidence of post-radiotherapy RION is rare, patients should

be counseled by providers about the potential late effects of radiation treatment and undergo routine surveillance after treatment.

Conclusion

Radiation-induced optic neuropathy is a rare late effect following radiation of the head and neck regions, which might result in devastating complications, including blindness in rare cases. We recommend routine ophthalmic examinations among these patients to prevent this rare but serious complication.

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Footnotes and Financial Disclosures

Conflict of interest:

The authors have no conflict of interest with the subject matter of the present manuscript.