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Case Report

Macular Edema after Prior Brachytherapy in a Diabetic Retinopathy Patient (Clinical Case)

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Abstract

The authors describe a case of radiation retinopathy after brachytherapy for uveal melanoma successfully treated with nepafenac 0.1%, a non-steroidal anti-inflammatory agent.

Keywords: *Radiation Retinopathy; Brachytherapy; Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)*

Introduction

The most common cause of vision loss after brachytherapy is radiation retinopathy [1-6]. Vascular occlusion caused by exposure of irradiation leads to a decrease in trophy, tumor resorption and tissues scarring. A key role in the pathogenesis of development of retinopathies in such cases plays radiation damage of endothelium of the retinal vessels [4]. The macular zone is most vulnerable due to its perfusion exclusively by choriocapillaries.

There are non-proliferative and proliferative active forms of radiation retinopathy. The first form is characterized by changing of shape and permeability of capillaries, intraretinal hemorrhages, exudation and retinal edema. When neovascular vessels appear in the retina or on the optic nerve head it's called proliferative form of radiation retinopathy [7]. Unlike diabetic retinopathy, when pericytes of the walls of blood vessels are primarily affected, radiation has bad influence on endothelium which mainly suffers [8].

There are some risk factors for radiation maculopathies emitted: the proximity of the edge of the tumor to foveola (less than 4 mm), high radiation dose on the base of the tumor, a large area of exposure, characteristics of radiation sources, the presence of perifocal changes in the retina (tumor-associated detachment) [5,9-12]. The probability of radiation retinopathy development and severity of pathological changes increase with combination of tumor process with diabetic fundus changes, which limits the possibility of using local ionizing irradiation of choroidal melanoma in patients with diabetes mellitus.

Case Description

Patient, 55 years old, third degree of obesity, type 2 diabetes mellitus and hypertension admitted to ophthalmological clinical hospital. During ophthalmological examination there was revealed choroidal melanoma and ophthalmoscopic signs of hypertensive type of retinal

angiopathy. Despite adverse vascular background, bilateral lesion was the basis for local radiation treatment of choroidal melanoma. After bilateral brachytherapy was held, tumor tissue was in a state of radiation edema. During two years of observation hemophthalmia of the right eye appeared twice. In the left eye the radiation response was limited by area of tumor. 33 months after brachytherapy patient noticed a sharp decrease of vision in her left eye (from 1.0 to 0.15). A flat scar with lipid deposits on periphery and macular edema were revealed in the zone of tumor. Optical coherent tomography (OCT) showed edematous retina in the macular zone (the thickness was 482 μm). Along with edema there were also signs of epiretinal fibrosis, neuroepithelial detachment, formation of multiple intraretinal foci of fibrosis, coarse destruction of the pigment epithelium and dystrophic changes in the sensory retina (See figure a).

We regarded the process as a late macular edema of diabetic origin with a worsening background like previous brachytherapy. Based on character of general disease, ophthalmoscopic measurements, a patient received vasoconstrictors, dehydration and antioxidative therapy and along with all these therapy we added the treatment with 0.1% nepafenac solution in the form of drops, (regimen - 1 drop 3 times a day). The results of treatment were valued by vision measurement, ophthalmometry and OCT.

After 2 weeks, visual acuity increased to 0.3. OCT: the thickness of the retina reduced up to 244 microns, but retinal neuroepithelium detachment still remained.

After 3 months from the start of treatment, visual acuity of the left eye increased to 1.0. OCT data showed a significant positive dynamic (attachment of neuroepithelium, reduce of the central thickness up to 200 microns (See figure b).

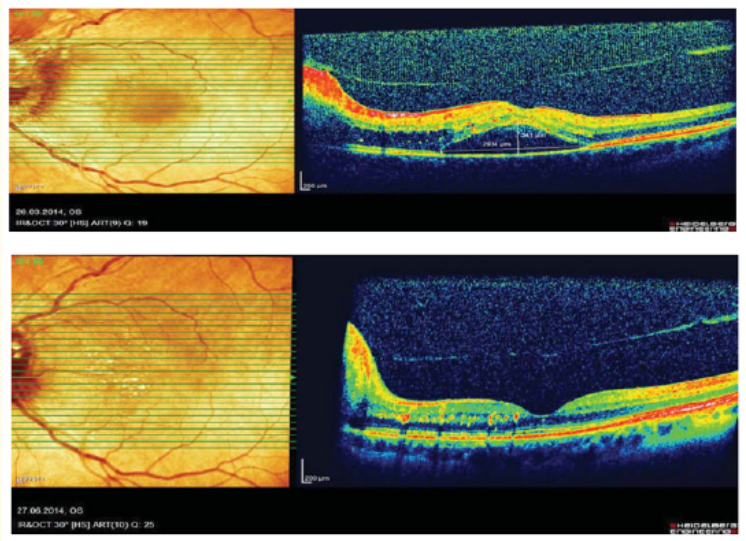

Figure : *OCT scans: figure a- before treatment (retinal thickness in fovea= 482 microns); figure b- 3 months after treatment (retinal thickness in fovea= 200 microns).*

Conclusion

Despite the general severe somatic background, local treatment of bilateral choroidal melanoma was only accompanied by a late appearance of macular edema, which successfully disappeared by means of 0.1% solution of nepafenac in the form of instillations. The patient is still under control.

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