Sterile endophthalmitis secondary to plaque brachytherapy for ciliary body melanoma

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Abstract:

Ocular inflammation following (125) Iodine brachytherapy for uveal melanoma is an uncommon complication. We present a case of sterile endophthalmitis following brachytherapy for ciliary body melanoma which responded well to bevacizumab and intravitreal triamcinolone acetonide.

I. Case History

A 33 year old white male initially presented for evaluation of a high-risk suspicious ciliary body nevus and was scheduled for targeted follow-up. He was lost to follow-up for five years and returned with complaints of severe blurred vision in the right eye (visual acuity 1/200). At this time he was diagnosed with a malignant melanoma (genetics class 1B signature) of the ciliary body (dimensions 9.5x7.5x5.3mm) and was treated with Iodine 125 radioactive plaque brachytherapy, phacoemulsification with posterior chamber lens implant, pars plana vitrectomy, membrane peel, endolaser and intravitreal triamcinolone acetonide. One month following brachytherapy, he reported severe pain with markedly decreased visual acuity (hand motion) in the right eye.

II. Pertinent Findings

The patient’s visual acuities were hand motion in the right eye, 20/20 in the left eye. His intraocular pressures were 21mmHg and 17mmHg with a right relative afferent pupillary defect. The cornea showed stromal edema with associated anterior chamber cells and flare with iridocorneal adhesion with marked anterior segment finbrinoid reaction with associated hemorrhagic, exudative, neovascular and inflammatory change. The patient underwent tap-and-inject (intravitreal vancomycin and ceftazidime) for initial concern of
infectious endophthalmitis. Cultures returned negative for aerobic and anaerobic organisms. Reevaluation of vitreous cultures one week following initial tap-and-inject were again, negative.

III. Differential Diagnosis

Sterile endophthalmitis is a diagnosis of exclusion and infectious causes must first be ruled out. Culture positive endophthalmitis most commonly occurs post-operatively, and is less likely to occur post-trauma or through endogenous spread\(^1\). Staphylococci and \textit{Streptococcus spp.} are the most likely causative organisms of culture positive cases of endophthalmitis according to a case series of culture positive endophthalmitis in a United Kingdom population\(^1\). Common symptoms including severe eye pain and blurred vision typically arise within 72 hours of initial insult.

IV. Diagnosis and Discussion

The diagnosis of sterile endophthalmitis was made based on a negative tap culture and clinical findings including the delayed time of presentation following intervention. The severe inflammatory reaction was a radiation-related inflammatory response secondary to tumor necrosis.

Uveal melanoma affects between 4.3 to 6 people per million in the United States\(^2\). Ciliary body melanoma is a subtype of uveal melanoma which represents approximately 10\% of all intraocular melanoma cases\(^2,4\). Ciliary body melanoma typically affects patients between the ages of 55 to 62 and has a high ten year mortality rate of between 30 and 50\%\(^2\). The prognosis including possibility of metastasis primarily depends on the size and genetic profile of the tumor\(^4\). For every millimeter increase in thickness, there is a 5\% increased risk of metastasis, the most common sites of metastasis being liver, lung and bone\(^4\). Our patient’s tumor can be classified as a ‘small type’ as its largest diameter is less than 11mm, and as such, the five-year survival rate for a small tumor is 86\%\(^3\).
V. Treatment and Management

The patient was initially treated with intravitreal antibiotics (vancomycin and ceftazidime) for potential infectious etiology and aggressive intravitreal triamcinolone acetonide as well as topical tobramycin, hyoscine and Durezol with slow taper. Two weeks following initiation therapy, he developed increased intraocular pressure in the right eye (32mmHg) and topical Cosopt (dorzolamide/timolol maleate) was added.

He continued to show improvement in clinical findings with improved visual acuity in the right eye with periodic intravitreal triamcinolone acetonide and bevacizumab over a one year period. His final visual acuity following anterior and posterior intervention in the right eye was 20/40.

VI. Conclusion

Sterile endophthalmitis following (125) Iodine radioactive plaque brachytherapy for treatment of ciliary body melanoma is a rare complication of treatment which requires aggressive long-term management for preservation of final visual acuity.

*Gonioscopy and anterior segment photographs prior to malignant transformation, anterior segment photographs following malignant transformation and anterior segment photographs following (125) Iodine brachytherapy to be included as well as final retinal OCT.*

References

