Ophthalmic oncology: Insights into tumor biology and treatment.

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Introduction

Diagnostic imaging techniques, such as high-definition digital fundus photography, ultrasound imaging, optical coherence tomography, Optical Coherence Tomography (OCT) angiography, Computed Tomography (CT) and Magnetic Resonance Imaging (MRI). In recent years, technological advances have enabled the development of hybrid Positron Emission Tomography (PET)/CT and PET/MRI systems, setting new standards in cancer diagnosis and treatment [1].

Retinoblastoma, more eyes are being salvaged due to intravitreal melphalan. Treatment techniques such as intra-arterial Chemotherapy (ChT) and intravitreal ChT. Melphalan-containing infusions, that melphalan-based intra-arterial ChT can result in severe neutropenia, especially when melphalan doses exceed 0.40 mg/kg.21. The radiation exposure should be minimized, particularly to protect the health of retinoblastoma patients with a germ line mutation. The anterior deep temporal artery and its anastomotic connection to the ophthalmic artery were successfully accessed and proposed as an alternate route for drug delivery. Used DL techniques for early detection and diagnosis of retinoblastoma. The proposed methodology consists of 3 phases: preprocessing, segmentation and classification [2].

Uveal melanoma with extrascleral extension, 2 scleromalacia secondary to plaque radiotherapy for uveal melanoma, 2 uveo-scleral nevi and 1 conjunctival squamous cell carcinoma with scleral invasion. All melanoma cases received plaque radiotherapy with palladium-103 and in the cases with nevi and squamous cell carcinoma, local resection with cryotherapy was done along with scleral graft. Histopathological analysis of the enucleated eye showed residual choroidal tumor with focal infiltration of the underlying sclera, associated with chronic inflammation. All scleral grafts were accepted when done as part of the primary tumor management despite synchronous radiotherapy, cryotherapy or scleral resection. They were less successful where performed as late procedure for radiation induced scleromalacia due to degenerative changes of the scleral bed [3].

Pediatric orbital tumors are biologically benign, but depending on their growth rate and anatomic location, benign tumors in the orbit can lead to vision loss, disfigurement and even death. The nonepithelial lesions included inflammation (64%) and lymphoid tumors (14%), whereas the epithelial lesions included dacryops (6%), pleomorphic adenoma (12%) and malignant epithelial tumors (4%). These results contradict the much quoted dictum that 50% of lacrimal gland lesions are primary epithelial tumors and 50% are nonepithelial lesions [4].

Most orbital tumors are nonmalignant. Nonmalignant orbital tumors can arise from any of the structures within the orbit, including blood vessels, fat, nerves, lacrimal gland and connective tissue. Nonmalignant orbital tumors can be grouped into cystic lesions, vascular tumors, lymphoproliferative lesions, inflammatory lesions, mesenchymal tumors, neurogenic tumors and lacrimal gland tumors. Endogenous endophthalmitis is a potentially blinding ocular infection resulting from hematogenous spread from a remote primary source. Endogenous endophthalmitis accounts for only 2–8% of cases of endophthalmitis and usually occurs in the setting of at least a relatively immunocompromised state. Causes include both gram-positive and gram-negative bacteria and fungi. Streptococcal species are the most commonly implicated bacterial organisms; Candida species are the most commonly implicated fungal organisms. Endogenous mold endophthalmitis is rare and typically occurs in the setting of relative immunocompromise or intravenous drug use [5].

Conclusion

Ocular manifestations are not infrequent in the presence of skull base tumors because of the crucial visual and oculomotor pathways traversing the skull base. Because familiarity with the intricate skull base anatomy is imperative for accurately diagnosing and effectively managing skull base tumors, this chapter provides a description of the anatomy of the skull base and a discussion of imaging techniques. Numerous types of tumors and their neuro-ophthalmologic correlations are also discussed, including esthesioneuroblastomas, chordomas, craniopharyngiomas, meningiomas, sinonasal tumors, schwannomas, pituitary tumors, myelomas, paragangliomas and metastases.

References

1. Barman M, Finger PT, Milman T. Scleral patch grafts in the management of uveal and ocular surface tumors. Ophthalmol. 2012;119(12):2631-6.
2. Chee SP, Jap A. Endogenous endophthalmitis. Curr Opin Ophthalmol. 2001;12(6):464-70.
3. Hink EM, Durairaj V. Nonmalignant Tumors of the Orbit. Ophthalmic Oncol. 2011:13-22.

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4. House WF, Hitselberger WE. The transcochlear approach to the skull base. Arch Otolaryngol. 1976;102(6):334-42.

5. Volpe NJ, Jakobiec FA. Pediatric orbital tumors. Int Ophthalmol Clin. 1992;32(1):201-21.

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