High-Risk Histopathology Features in Primary and Secondary Enucleated International Classification of Retinoblastoma Group D Eyes

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Purpose: To evaluate the rate and identify risk factors for high-risk histopathology (HRH) features in group D retinoblastoma eyes enucleated as primary or secondary treatment.

Methods: Retrospective clinicopathologic correlation of consecutive group D eyes enucleated from 2002 – 2014. HRH features were defined as presence of anterior chamber seeds, iris/ciliary body/muscle infiltration, massive (≥3mm) choroidal invasion, retrolaminar optic nerve invasion, or combined non-massive choroidal and prelaminar/laminar optic nerve invasion.

Results: There were 64 group D eyes enucleated, of which 40 (40 patients) were primary and 24 (22 patients) secondary to other treatments. HRH features were detected in 10 (16%) eyes in the entire cohort; in 5 cases in each of the primary and secondary enucleated groups (13% and 21%, respectively). Absence of vitreous seeds at presentation was the only predictive factor found for HRH features in the primary enucleation group (P=0.042), whereas none were found in the secondary group (P≥0.179). Anterior structures invasion (anterior chamber, iris, ciliary body/muscle) was found significantly more after secondary enucleation (P=0.048). All patients with HRH features were treated with adjuvant chemotherapy and no metastases occurred in a median follow-up time of 73.2 months (mean: 71.5, range: 13.7-153.0).

Conclusion: The choice of primary treatment for group D retinoblastoma should be carefully weighed, as 13% of eyes harbor HRH features at presentation, with absence of vitreous seeds being a potential risk factor. Secondary enucleated group D eyes with HRH features more commonly involved anterior structures. Meticulous clinical and histological examinations are warranted for this subset of patients.