Risk of Metastasis and Orbital Recurrence in Advanced Retinoblastoma Eyes Treated with Systemic Chemoreduction versus Primary Enucleation

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Purpose: To evaluate the risk of metastatic disease and orbital recurrence in advanced retinoblastoma treated with systemic chemoreduction versus primary enucleation.

Methods: Retrospective review of patients with Group D/E retinoblastoma from 1995 to 2015. Overall, 345 eyes (294 patients) were included (165 Group D and 180 Group E). Primary outcome measures were orbital recurrence and metastatic disease.

Results: Of 345 eyes, 139 were treated with systemic chemoreduction (102 Group D, 37 Group E) and 206 with primary enucleation (63 Group D, 143 Group E). In the chemoreduction group, 1 patient developed metastasis (0.7%) and 1 patient an orbital recurrence (0.7%). In the primary enucleation group, 2 patients developed metastases (0.9%) and 1 an orbital recurrence (0.5%). After systemic chemoreduction, 58 of 139 eyes (30 Group D, 28 Group E) were secondarily enucleated for treatment failure (41.7%). The median time to secondary enucleation from diagnosis was 8.1 months. None of the eyes in the systemic chemoreduction group had high-risk pathologic features. In the primary enucleation group, 56 eyes had high-risk pathology.

Conclusion: Over a 20-year period, 345 eyes were treated for advanced retinoblastoma at Children’s Hospital Los Angeles. Incidence of orbital recurrence and metastatic disease was <1% and did not vary by treatment modality or Group Classification. None of the eyes enucleated for treatment failure had high-risk pathology, and none of these patients developed metastatic disease. Globe salvage therapy with systemic chemoreduction and subsequent enucleation for poor response does not increase the risk of metastatic disease or orbital recurrence.