Retrospective Analysis of Ocular Salvage in Selective Ophthalmic Artery Infusion Chemotherapy (SOAIC) Treated Patients at CCHMC

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Introduction: SOAIC is employed to increase ocular salvage and reduce systemic chemotherapy exposure in retinoblastoma management; however, clarity regarding prognostic factors predicting ocular salvage in SOAIC-treated patients is lacking.

Hypothesis: Patient, tumor, and SOAIC variables associated with improved ocular salvage will reveal guiding prognostic factors in the management of retinoblastoma.

Methods: Approval from the CCHMC Institutional Review Board was obtained to perform a retrospective chart review of retinoblastoma patients treated with SOAIC between December 2008 and December 2019. Patient demographics, international classification for intraocular retinoblastoma (ICRB), treatment data, procedural data, adjunctive therapies, and ocular outcomes were collected and managed using REDCap electronic data capture tools hosted at CCHMC. Mantel-Cox tests of 48-month ocular survival were calculated using GraphPad Prism version 8.4.3 for Mac.

Results: Forty-nine eyes from 43 patients received SOAIC for retinoblastoma during the study period (21 unilateral, 22 bilateral). The ICRB ocular groupings were Group B (14%), Group C (16%), Group D (51%), Group E (10%), and not available (9%). 23 patients had received and 20 did not receive anti-neoplastic treatments prior to SOAIC treatment. Ocular survival was significantly higher in the 2015-2019 treatment era (82.5%, p=0.014) compared to 2008-2015 (39.9%), in patients who received balloon-assisted SOAIC (bSOAIC) in >2/3 of cycles (69.3%, p=0.032) compared to those who did not (33.3%), and in patients who received adjunctive laser ablation treatments (86.5%, p=0.008) compared to those who did not (46.3%). In patients with vitreous seeding, ocular survival was significantly better (p=0.048) in those who received IVitC (53.4%) compared to those who did not (33.3%). Prior therapy status, triple chemotherapy agents, and intra-arterial verapamil had no significant impact on ocular survival at 48 months.

Conclusions: The use of SOAIC in retinoblastoma management at CCHMC is now considered by many as a standard therapy option. In our experience, ocular salvage has significantly increased over time; increased utilization of bSOAIC, adjunctive laser ablation, and IVitC over time could contribute to this finding.

Acknowledgements: This study was supported in part by NIH grant T35DK060444. REDCap electronic capture software was supported by CCTST grant 2UL1TR001425-05A1.