

DIRECT (INTRA) OPHTHALMIC ARTERY DELIVERY OF CHEMOTHERAPY (MELPHALAN) FOR ADVANCED INTRAOCULAR RETINOBLASTOMA WITH SEEDING: AN ALTERNATIVE TO ENUCLEATION

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Purpose: To develop a technique of selective ophthalmic artery infusion of chemotherapy (Melphalan) for children with advanced intraocular retinoblastoma. To study the feasibility, efficacy, outcome and complications of this novel approach.

Methods: Under general anesthesia and from a femoral artery access, a 4 French (1.3mm) catheter was advanced into the internal carotid artery of the involved eye while anticoagulation was obtained with intravenous Heparin (75IU/Kg). An arteriogram was done to confirm localization and utilizing fluoroscopy and roadmapping, the ophthalmic artery was catheterized with either a flow directed (Magic, Balt Therapeutics, Montgomery, France) or guide wire directed) Excelsior SL 10 Boston Scientific, Fremont CA) microcatheter with outside diameters of 0.4 to 0.57mm. After confirming that the microcatheter was in the ophthalmic artery, Melphalan was injected over 30 minutes at a 1cc/minute flow rate. After observation for bleeding at the femoral artery puncture site the child was discharged the same day without post-procedure medications and reevaluated under anesthesia three weeks later with indirect ophthalmoscopy, RetCam imaging, ultrasound and ERG's. Post treatment CBC's were also done 1 to 2 weeks after treatment.

Results: Retinoblastoma children (Ages 9 months-2 years) with advanced intraocular retinoblastoma and seeding (Reese Ellsworth Vb) were treated with one to three treatment sessions of intra-arterial chemotherapy. The ophthalmic arteries were all around 1mm in diameter (550-1100 microns) and could be cannulated in all cases except when anomalous branches of the middle meningeal artery supplied the ophthalmic artery (1 case). There was no systemic toxicity, fever, alopecia, hospitalizations or infections. No local ocular, orbital or motility adverse effects were found except occasional mild conjunctival hyperemia. All tumors, including vitreous seeds, showed dramatic reduction in volume and became Type I regression patterns. No eye has been lost to date. This technique has already replaced enucleation for most of the advanced retinoblastoma eyes in our center that would have been previously enucleated.