

**SCIENTIFIC SESSION 9
INTRAOCULAR TUMORS**

Shilpakalavedika Convention Center
Monday, January 26, 2004
8:30 AM – 10:30 AM

*Chair: Stefan Seregard
Co-chair: Pran Nath Nagpal
Moderator: Lingam Gopal
Session Summary: Lingam Gopal*

| | Presenter | Title of Presentation | Time |
|----|-------------------|--|----------|
| 1 | Norbert Bomfeld | Key Note Lecture: Current Management of Vascular Tumors | 8:30 AM |
| 2 | Peter Jensen | Correlations between In-Vivo Ultrasound Biomicroscopy and Histological Sections of Intraocular Anterior Segment Tumors | 8:45 AM |
| 3 | Fernando Arevalo | Indocyanin Green Videoangiography Characteristics of Selected Ocular Tumors | 8:55 AM |
| 4 | Jyotimoy Biswas | Fine Needle Aspiration Biopsy of Suspected Intraocular Tumors | 9:05 AM |
| 5 | Janette VanSoelen | Low Dosage PDT of Circumscribed Choroidal Haemangioma | 9:15 AM |
| 6 | Arun Singh | Photodynamic Therapy for Circumscribed Choroidal Haemangioma | 9:25 AM |
| 7 | Edoardo Midena | The Treatment of Circumscribed Choroidal Haemangioma with Photodynamic Therapy: A Randomized Pilot Study | 9:35 AM |
| 8 | Anita Leys | Neovascular Growth after Photodynamic Therapy of Choroidal Haemangioma | 9:45 AM |
| 9 | Javier Elizalde | Iodine 125 Brachytherapy for the Management of Extensive Retinal Detachment Secondary to Choroidal Haemangioma | 9:55 AM |
| 10 | Suryasnata Rath | Plaque Brachytherapy in Diffuse Choroidal Haemangioma | 10:05 AM |
| 11 | Jemy Shields | Melanocytoma of Optic Disc in 115 cases | 10:15 AM |
| 12 | Lingam Gopal | Session Summary | 10:25 AM |

KEY NOTE LECTURE CURRENT MANAGEMENT OF VASCULAR TUMORS

Norbert Bornfeld

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CORRELATIONS BETWEEN IN VIVO ULTRASOUND BIOMICROSCOPY AND HISTOLOGICAL SECTIONS OF INTRAOCULAR ANTERIOR SEGMENT TUMORS

Peter Jensen, Steffen Heegaard, Svend Kessing, Jan Prause

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PURPOSE: To investigate the feasibility of ultrasound biomicroscopy (UBM) examination in the diagnosis and estimation of tumor extension in iris and ciliary body tumors. **METHODS:** Images of tumors located around the anterior chamber angle were obtained by a Humphrey 740 UBM. The focal plane was positioned close to the tumor center and several perpendicular scans were performed. The depth and lateral extension were evaluated by inspection of the images. Block excision of tumors was performed after lamellar dissection of scleral and corneal flaps. The specimens were fixed in formalin and examined by light microscopy. Histological classification and tumor extension were evaluated on HE-stained sections. **RESULTS:** The number of patients with tumors located in the iris, ciliary body or both were 17, 6, and 6, respectively. The histological diagnoses were primary iris cyst (1), medulloblastoma (1), adenoma (3), leiomyomas (2), and melanomas (7 spindle, 8 epithelioid and 7 mixed cell type). Classification by UBM was possible for the first three groups only. For all tumors close correspondence was observed between extension judged by UBM and by histology. **CONCLUSION:** Scanning by UBM gives an accurate estimation of tumor extension in the iris and ciliary body. This information is essential for planning of therapy.

INDOCYANINE GREEN VIDEO-ANGIOGRAPHY (ICG-V) CHARACTERISTICS OF SELECTED OCULAR TUMORS

J Fernando Arevalo, Carol Shields, Jerry Shields, Dario Fuenmayor-Rivera, Rafael Muci-Mendoza

Clínica Oftalmológica Centro, Caracas, Venezuela

PURPOSE: To determine the value of indocyanine green video-angiography (ICG-V) in the evaluation of selected ocular tumors. **METHODS:** ICG-V was prospectively performed in 155 consecutive patients (eyes) with ocular tumors. **RESULTS:** In the group of patients with choroidal malignant melanoma (110 cases) we observed a maximum fluorescence at 21.2 (range: 0.4 to 66) minutes after the injection of dye. In the group of eyes with circumscribed choroidal hemangioma (25 cases) the earliest hyperfluorescence was observed 0.5 (range: 0.2 to 1) minutes after the injection of dye, while the maximum hyperfluorescence was seen 3.7 (ranges: 0.5 to 11.7) minutes after the injection. In the late phase of the study 18 (72%) cases showed a "washout" of dye. In the group with choroidal metastasis (16 cases) 12 (75%) cases showed a diffuse homogeneous fluorescence with late isofluorescence. In optic nerve sheath meningioma (4 cases), the course of opticiliary veins was followed from their origin at small tributaries of the central retinal vein, their junction with choroidal veins, and finally to their drainage in the vortex venous system. **CONCLUSION:** ICG-V may be a useful non-invasive ancillary test in the differential diagnosis of ocular tumors.

FINE NEEDLE ASPIRATION BIOPSY OF SUSPECTED INTRAOCULAR TUMORS

Jyotirmoy Biswas, Sunil Ganekal, Krishnakumar, Mahesh Shanmugam, Lingam Gopal, Shyam Sundar Prasad

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PURPOSE: To report the utility of Fine needle aspiration biopsy of suspected intraocular tumor. **METHODS:** Between 1995 and 2003, FNAB was done in 13 cases of suspected intraocular tumor. These cases underwent complete ophthalmic and systemic evaluation, ultrasonography (all cases), ultrasound biomicroscopy (2 cases), and magnetic resonance imaging (3 cases). FNAB was done using a 25 gauge one and half inch needle. **RESULTS:** FNAB was suggestive of metastatic tumor (5 cases) inflammatory mass (3 cases), malignant melanoma of choroid (2 cases) large cell lymphoma and retinoblastoma one case each. In one case material was found to be inadequate. Subsequently enucleation was required in 4 cases. Histopathology showed ciliary body adenoma, malignant melanoma, metastatic tumor and carcinoid tumor one case each. Histopathology correlated well with FNAB findings. **CONCLUSION:** FNAB was quite helpful in establishing or confirming the diagnosis in suspected intraocular tumor with diagnostic dilemma.

LOW DOSAGE PDT OF CIRCUMSCRIBED CHOROIDAL HEMANGIOMA

Janette Van Soelen, Bertil Damato

Moorfields Eye Hospital, London

PURPOSE: To report results of low dosage photodynamic therapy of circumscribed choroidal hemangioma. **METHODS:** 14 patients were treated between July 2001 and September 2003. Verteporfin 6mg per square meter of body surface area was administered by intravenous infusion of 30 ml over 10 minutes. Fifteen minutes after the start of the infusion 689nm laser with intensity of 600 mW per square centimetre over 83 seconds, delivering 50 J per square centimetre, was applied. In five cases with tumors larger than maximum spot size (7600 microns), additional spots were used. Mean tumor thickness was 2.4mm (range 0.9-4.5mm). **RESULTS:** 13 of 14 patients needed only one treatment while one required two sessions. Visual acuity improved in all but two patients, both of who had longstanding poor vision. Mean tumor height after treatment was 1.2mm (range 0-3.1mm). **CONCLUSION:** The protocol used for Verteporfin photodynamic therapy treatment of choroidal neovascularisation in age-related macular degeneration gives similar responses in the treatment of circumscribed choroidal hemangioma.

PHOTODYNAMIC THERAPY FOR CIRCUMSCRIBED CHOROIDAL HEMANGIOMA

Arun Singh, Mohit Gupta, Paul Rundle, Ian Rennie

Cole Eye Institute, Cleveland Clinic Foundation, Cleveland, OH, USA

PURPOSE: To report efficacy of Photodynamic therapy (PDT) in treatment of 9 cases of juxtafoveal circumscribed choroidal hemangioma. **METHODS:** 9 patients (6 primary, 2-failed TTT and 1 failed radiotherapy) were treated with verteporfin, 6mg/m² given as IV infusion over 10 minutes. Diode laser (690 nm) with intensity of 600mW/cm² for 83 seconds (50mJ/cm²) was applied 5 minutes after completion of infusion. Multiple spots were applied in a single session to cover the entire surface of the tumor. The median pretreatment tumor size was 7.0mm base and 2.5mm thickness. Periodic follow up with ophthalmoscopy, ultrasonography and angiographic studies were performed. **RESULTS:** All 9 patients (100%) showed complete regression of the tumor with resolution of subretinal fluid, flattening of tumor and absence of choroidal vasculature on ICG. The visual acuity improved or remained stable in 7 patients. One patient was noted to have post treatment subretinal fibrosis. The overall retinal vessels

remained unaffected. There were no systemic complications. **CONCLUSION:** PDT is an effective treatment for the management of circumscribed juxtafoveal choroidal hemangiomas.

THE TREATMENT OF CIRCUMSCRIBED CHOROIDAL HEMANGIOMA WITH PHOTODYNAMIC THERAPY: A RANDOMIZED PILOT STUDY

Edoardo Midena, Elisabetta Pilotto, Pietro Radin

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PURPOSE: To analyze clinical behavior of circumscribed choroidal hemangioma (CCH) treated with two regimens of photodynamic therapy (PDT). **METHODS:** Twelve consecutive symptomatic patients affected by CCH underwent PDT treatment of their lesion. PDT was randomly performed with two different treatment modalities: standard PDT treatment (verteporfin 6 mg/sqm; 30 ml IV in 10 min; treatment at 15 min; 50 J/sqcm; 83 sec) and bolus PDT treatment (verteporfin 6 mg/sqm; IV bolus in 1 min; treatment at 5 min; 100J/sqcm; 166 sec) Best corrected visual acuity (ETDRS chart), fundus photography and indocyanine green angiography (ICGA) were performed at each follow-up examination (1 and 4 weeks; every 3 months). **RESULTS:** Five patients were treated with standard PDT and seven with bolus regimen. Minimum follow-up was 6 months. One single treatment was performed in each patient. Best corrected visual acuity improved from one to four lines with both PDT treatment regimens (no significant difference). CCH flattened and subretinal fluid reabsorbed in both treatment groups, faster in bolus treated eyes. Reactive pigment epithelium hyperplasia and subretinal fibrosis were more evident in the bolus PDT treated eyes. **CONCLUSION:** The management of CCH should be tailored to the tumor size, location, and related ocular symptoms, moreover it should critically consider long term side effects of any proposed modality. PDT seems to be a promising and safe modality for the treatment of symptomatic CCH, but PDT administration regimen and local side effects need long term evaluation.

NEOVASCULAR GROWTH AFTER PHOTODYNAMIC THERAPY OF CHOROIDAL HEMANGIOMA

Anita Leys, Rufino Silva

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PURPOSE: Retinal or optic disc neovascularization has been observed in association with choroidal hemangiomas and according to literature could be considered as a rare and harmless finding. We observed growth of pre-existing neovascularization in two patients after photodynamic therapy (PDT). **METHODS:** Two cases of neovascular growth after PDT of choroidal hemangioma were identified and studied in two ophthalmology units with PDT experience. Results were compared with findings in choroidal hemangiomas treated with other modalities. **RESULTS:** Two patients presented neovascular growth and subhyaloid hemorrhage after respectively 2 and 3 sessions of PDT. In one patient the neovascularization regressed completely after a triamcinolone intravitreal injection. **CONCLUSION:** Our findings suggest that PDT of choroidal hemangioma is associated with release of VEGF or other angiogenesis inducing factors which may result in neovascular growth. Moreover, the neovascularization seems to respond favorably to the anti-angiogenic effect of triamcinolone.

IODINE 125 BRACHYTHERAPY FOR THE MANAGEMENT OF EXTENSIVE RETINAL DETACHMENT SECONDARY TO CHOROIDAL HEMANGIOMA

Javier Elizalde

Barraquer Institute, Barcelona, Spain

PURPOSE: To evaluate the clinical outcome, results and complications of episcleral brachytherapy for the management of exudative retinal detachment secondary to choroidal hemangioma. **METHODS:** Seven consecutive eyes with choroidal hemangioma undergoing brachytherapy were evaluated retrospectively over 1-5 years. **RESULTS:** Prior to treatment all cases presented with a prominent and extensive exudative retinal detachment secondary to a well-defined choroidal hemangioma (mean ultrasound measurements: 8.35 mm in base by 5.35 mm in thickness). Mean total dose to the apex was 20 Gy (mean Gy 0.45/hr). Exudative retinal detachment resolved in 7 cases (100%) over mean of 4 months (range 3-5 months). Two cases (28.5%) developed a postoperative retinal cyst and one case (14.2%) showed clinical features of radiation retinopathy. Visual acuity improvement and tumor regression were noticed in all cases (100%). **CONCLUSION:** Low dose plaque radiotherapy is an effective therapeutic method for the management of retinal detachment secondary to choroidal hemangioma.

PLAQUE BRACHYTHERAPY IN DIFFUSE CHOROIDAL HEMANGIOMA

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PURPOSE: To evaluate Ruthenium 106 plaque brachytherapy for the treatment of diffuse choroidal hemangioma with exudative retinal detachment in patients with Sturge Weber syndrome. **METHODS:** Four patients of Sturge Weber Syndrome with diffuse choroidal hemangioma and exudative retinal detachment involving the macula who presented with diminution of vision were treated with Ruthenium-106 plaque brachytherapy. The pre-and post-treatment visual acuity, tumor thickness by B-scan ultrasonography, resolution of subretinal fluid and complications were analyzed. **RESULTS:** There was regression of choroidal hemangioma and complete resolution of subretinal fluid in all cases and the mean maximal thickness reduced from 5.3 mm to 3.0 mm at 6 weeks. The visual acuity improved by two or more Snellen lines in 3 patients. **CONCLUSION:** Ruthenium 106 plaque brachytherapy is a viable modality in the management of diffuse choroidal hemangioma with exudative retinal detachment involving the macula.

MELANOCYTOMA OF OPTIC DISC IN 115 CASES

Jerry Shields, Hakan Demirci, Arman Mashayekhi, Carol Shields

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PURPOSE: A study of patients with optic disc melanocytoma evaluated at one institution. **METHODS:** A retrospective case series. **RESULTS:** There were 115 patients (116 eyes). Mean age at diagnosis was 50 years, 38% were male, 62% female, 65% Caucasian, 29% African-American, and 6% Asian. The lesion was unilateral in 99%. Related visual symptoms were present in 26% and afferent pupillary defect in 9%. Associated ocular abnormalities included ocular melanocytosis (8%), disc hypoplasia (2%) and retinitis pigmentosa (1%). Mean tumor diameter was 2 mm and mean thickness 1 mm. Other findings included choroidal component (54%), retinal component in (30%), disc edema (25%), retinal edema (16%), subretinal fluid (14%), retinal hemorrhage (6%), vitreous seeds (5%), and retinal vein obstruction (3%). Fluorescein typically showed persistent hypofluorescence of the lesion. Using Kaplan Meier analysis, related visual loss occurred in 18% by 10 years and tumor enlargement in 32% by 10 years. Malignant

transformation occurred in 2 cases (2%). **CONCLUSION:** Although optic disc melanocytoma is a benign, usually stationary lesion, it can produce local complications, grow slowly, cause visual loss and rarely undergo malignant transformation. Patients with melanocytoma should undergo periodic ocular examination.

SESSION SUMMARY

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