

5172 — B679

USE OF THE ANTIBIOTIC REMOVAL DEVICE IN ENDOPHTHALMITIS CULTURES
(R. L. Penland and K.R. Wilhelmus) Sid W. Richardson Ocular Microbiology Laboratory,
Cullen Eye Institute, Baylor College of Medicine.

Purpose: To determine whether the use of an antimicrobial removal device (ARD) to process intraocular fluids before culture increases the likelihood of a positive result compared with conventional cultures. **Methods:** We retrospectively reviewed all cases of endophthalmitis from January 1982 through June 1996 from whom aqueous and/or vitreous specimens were obtained that were cultured by direct media inoculation and by ARD processing. An ARD[®] containing two resins, sodium polyacrylate, and saline for blood cultures was obtained from Becton Dickinson Microbiology Systems (Cockeysville, MD) and divided into 2.5-ml aliquots. Aqueous and vitreous samples were inoculated into the tubes with ARD for approximately 5 minutes. The fluid was withdrawn and cultured using conventional media; thioglycolate broth was then added to the tube containing the resin beads. The direct and ARD-processed cultures were incubated at 35°C for at least 7 days. **Results:** Of the 337 endophthalmitis cultures that were processed using both conventional cultures and a parallel micro-ARD, 165 (49%) yielded positive microbial growth on one or more media, 21 (12.7%) were positive only from the ARD-processed sample, 17 (10.3%) were positive by conventional culture only and 127 (77.0%) were positive in both the ARD-processed and direct cultures ($p = 0.8$). The spectrum of microorganisms was similar among all culture groups. Of 91 positive cultures from patients in whom prior antibiotic use was documented, 9 (9.9%) had positive growth only from the ARD-processed specimen, 17 (10.3%) from conventional cultures only and 127 (77%) from both ($p = 1.0$). Of 59 patients with culture-positive endophthalmitis who underwent repeat specimen collection, the same organism was again recovered from the ARD only in 3 cases, from conventional cultures only in 2 cases and from both in 13 cases. **Conclusion:** Use of an antimicrobial removal device increases the yield of microbial growth, but the detection rate is not significantly better than conventional cultures, whether or not antimicrobial therapy is being used. Microbial recovery from intraocular fluids is partly dependent on the number of cultures and either an extra thioglycolate culture or ARD-processing can improve the laboratory diagnosis of microbial endophthalmitis.

Supported by the Sid Richardson Foundation and Research to Prevent Blindness, Inc. None

5173 — B680

DOES ENDOPHTHALMITIS HAVE A SEASONAL FLUCTUATION?
(K. R. Wilhelmus and R. L. Penland)
Sid W. Richardson Ocular Microbiology Laboratory, Cullen Eye Institute,
Baylor College of Medicine, Houston.

Background: Microbial endophthalmitis is due to intraocular contamination or seeding from ocular surgery, trauma, or sepsis yet seems to occur sporadically in a minority of patients.

Purpose: To evaluate the monthly distribution of culture-positive endophthalmitis and to assess the effects of age, route of infection, and microbial etiology on the seasonal pattern.

Methods: This time-trend analysis of our laboratory registry used a retrospective compilation of all human cases of endophthalmitis diagnosed between 1977 and 1996 that were confirmed by microbial growth from one or more intraocular fluid specimens, taken as the date of initial aqueous or vitreous collection. Seasonal pattern and circannual rhythm were assessed by chi-square and cosinor tests.

Results: Five hundred ten (54%) of 950 cases of suspected endophthalmitis cultured during the 20-year study period were culture-positive; 92% of the confirmed cases were bacterial and 8% were fungal. Culture-positive endophthalmitis was diagnosed at an average rate of 2 cases per month and was slightly more frequent during the summer and autumn months compared with other seasons ($p = 0.06$). The rate of fungal infection was greatest between July and September ($p = 0.001$). Ten of the 15 cases of *Bacillus cereus* endophthalmitis occurred between November and April.

Conclusion: The occurrence of endophthalmitis varies only slightly by season, largely due to its predisposing causes. Organisms causing endophthalmitis that are not part of the normal ocular surface flora occur more often at certain times of the year, perhaps due to microbial growth patterns in the environment.

Supported by the Sid Richardson Foundation & Research to Prevent Blindness, Inc. None

5174 — B681

CONCENTRATION OF VANCOMYCIN IN THE VITREOUS FOLLOWING INTRAVENOUS
ADMINISTRATION IN POSTOPERATIVE ENDOPHTHALMITIS

Joseph R. Ferencz MD (1), Eitan Rubinstein MD (2), Ehud I. Assia MD (1),
(1) Dept. of Ophthalmology, Meir Hospital, Sapir Medical Center, Kfar-Saba, Israel; (2)
Dept. of Infectious Diseases, Sheba Medical Center, Tel-Hashomer, Israel

Purpose: 1. to measure the concentration of vancomycin in the vitreous in patients with postoperative endophthalmitis following the administration of a 1 gram dose intravenously, 2. to examine whether this concentration is adequate for the treatment of gram positive infection. **Methods:** Patients with postoperative endophthalmitis were injected intravenously with 1 gram vancomycin and vitreous tap was taken for microbiological cultures and vancomycin concentration. The minimal inhibitory concentration (MIC) and vitreous cidal activity (VCA) were measured. **Results:** Seventeen patients were studied, 14 vitreal samples were available for vancomycin assay and bacteriological cultures 1-5 hours following 1 gram dose of intravenous vancomycin injection. Vancomycin concentrations in the vitreous ranged from 0.4-4.5 mcg/ml. Of the bacterial isolates 9 were studied for vancomycin susceptibility. The MICs were: for *Staphylococcus epidermidis* 1.9 mcg/ml, for *Streptococcus viridans* 0.5 and 3.9 mcg/ml and for *Streptococcus pneumoniae* 0.5 mcg/ml. The VCA was higher than 1:2 in all examined cases. In 3 patients an additional vitreous tap was taken 40-72 hours after intravitreal injection of vancomycin. Vancomycin levels in the vitreous were: 182, 138 and 58 mcg/ml, and VCAs were: 1:512, 1:32 and 1:32 respectively. **Conclusions:** The concentration of vancomycin in the vitreous for treatment of postoperative gram positive endophthalmitis was not adequate after I.V. injection, but was adequate after intravitreal injection. This study supports the results of the multicenter endophthalmitis vitrectomy study that systemic administration of antibiotics is not effective.

None

5175 — B682

INTRACULAR LENS IMPLANTS AND POSTOPERATIVE ENDOPHTHALMITIS: A
RETROSPECTIVE STUDY

(M Tiemery, H Tabandeh, J W B Bainbridge, C K Rostron)
St George's Hospital, London SW17 0QT
Correspondence to Mr Tiemery

KEYWORDS: Cataract surgery, intraocular lenses, endophthalmitis

ABSTRACT

Purpose: A retrospective case-control study has suggested an association between the use of three-piece silicone polypropylene intraocular lenses and an increased risk of postoperative endophthalmitis. Confirmation of this association by further studies is required before firm conclusions can be reached and recommendations for practice can be made. We investigated whether our own experience with this type of intraocular lens confirms such an association.

Methods: A retrospective analysis of 1817 patients undergoing cataract surgery in a single unit over a three year period was conducted to compare the incidence of postoperative endophthalmitis associated with silicone polypropylene intraocular lenses associated with single piece polymethylmethacrylate lenses.

Results: Of the 151 patients who received silicone-polypropylene intraocular lenses, 6 (3.97%) developed endophthalmitis. The remaining 1667 patients received polymethylmethacrylate (PMMA) lenses. Of these, only 1 patient (0.06%) developed endophthalmitis. The relative risk of postoperative endophthalmitis associated with the use of the three piece silicone-polypropylene lens compared to the one piece PMMA lens was 66.2. Using Fisher's Exact Test the association was found to be highly significant ($P < 0.0001$).

Conclusion: Possible mechanisms to explain the risk of postoperative endophthalmitis associated with silicone polypropylene lenses are discussed. On the basis of our findings we agree with the recommendations advising against the routine use of three piece silicone-polypropylene intraocular lenses where an alternative is available.

5176 — B683

DETECTION OF *C. albicans* IN VITREOUS SAMPLES ((N. Okhravi^{1,2}, P. Adamson¹, R. Mant¹, S. Lightman^{1,2})) Institute of Ophthalmology, London, UK¹; Moorfields Eye Hospital, London, UK².

Purpose: Fungal endophthalmitis secondary to *C. albicans* often has classical signs which in the presence of a typical case history presents sufficient evidence on which treatment can be commenced. Mycological identification by culture can take from 24-48 hours to complete. Many cases are, however, culture negative and even in the case of culture positive samples, the number of organisms cultured can be very few. We have therefore developed a sensitive and specific PCR detection method and a novel DNA extraction procedure for fungi which avoids multiple tube transfers and potential loss of sample or organisms. **Method:** After 24 hours of growth at 30°C, serial dilutions of *C. albicans* were prepared in distilled water. 5 µl of each dilution was plated out on blood agar and incubated at 30°C for 36 hours. An equal volume was used to spike healthy samples of vitreous (5µl). DNA was then extracted from these samples by a procedure using zymolase, and without the need for phenol: chloroform extraction or ethanol precipitation. 25µl PCR reactions were then set up using primers based on the Cytochrome P450 L₁ A₁ demethylase gene and the resulting products were visualised after agarose gel electrophoresis. **Results:** Both ATCC and clinical isolates of *C. albicans* were successfully identified after two rounds of PCR. The sensitivity of the reaction is currently 5-12 organisms. No DNA from a wide range of Gram positive and negative bacteria or human lymphocytes was amplified. **Conclusion:** The DNA extraction and PCR method described is a rapid, sensitive and specific method for detection of *C. albicans* in vitreous samples, thereby allowing a higher diagnostic yield to be obtained and aiding in the management of patients with fungal endophthalmitis. Supported by The Wellcome Trust Vision Research Training Fellowship and Moorfields Eye Hospital Research Funds. None

5177 — B684

ANTIBIOTIC AND ADJUNCTIVE STEROID THERAPY IN SEVERE
ENDOGENOUS AND EXOGENOUS ENDOPHTHALMITIS.

((H.L. Kain, S. Imper, C. Champion, Ch. Prunte)) Eye Clinic University Basel,
Switzerland.

Purpose: In endophthalmitis (E.) suboptimal outcomes occur despite bacteriologic cure, because tissue destruction may result from a secondary host-inflammatory response. However, immunosuppression may reduce the ability of the immune system to eliminate microorganisms. We report on our clinical experience with adjunctive steroid therapy in 22 cases. **Methods:** Consecutive patients with severe exogenous E. (5 perf. injury, 1 bulbus rupture, 1 perf. ulcer, 1 bleb infection, 4 post cataract surg. 1 post vitrectomy) or endogenous E. (6 eyes: candida, 1 paecilomyces, 2 eyes streptococ.) were treated with vitrectomy, antibiotic and steroids (200-500 mg/die prednisone). Vitrectomy was performed because antibiotic therapy showed unsatisfying response, and ultrasonography indicated progressing vitreous infiltration or exudative choroidal detachment. Function was HM or light perception, except 2 eyes with 20/100; 20/200. No drugs were given intravitreally, except in candida E. (7.5 µg Amphotericin B post surgery). Antibiotics/-mycotics/steroids were applied systemically. **Results:** The treatment (antibiotics/steroids) resulted in a rapid recovery of function regardless of the causative organisms. No eye was lost or remained with intraocular inflammation. In 1 eye, retinal detachment required siliconeoil tamponade, in 2 detachment was cured with pneumoretinopexie. 3 of 22 eyes reached function of less than 20/50, all others 20/30 or better. **Conclusions:** No negative effects could be observed on intraocular inflammation and no general sideeffects due to steroid therapy. Our results indicate that adjunctive steroids do not interfere negatively with antibiotic therapy even in mycotic E., and improved the outcome following severe endo- and exogenous Endophthalmitis. none