Cornea and External Eye Diseases

Chairperson: N Barker

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Ultaviolet-B Radiation and Inflammation: Update

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Objective: The role of ultraviolet B radiation (10–400 nm wavelength) in the pathogenesis of keratoses, pterygium, skin and conjunctival carcinomas and cataract is well documented. This presentation examines the mechanisms by which solar UV-B leads to the production of cytokines, tumour necrosis factor alpha and interleukin-6 resulting in altered RNA coding and abnormal cell growth and development.
Method: Five patients with clinically significant pterygious carcinomas were examined retrospectively. Clinical history and pathology were correlated and analysis at the cellular level was made. Through laboratory trials on blood samples of mouse models, the key overseers in the transaction from UV-B radiation to inflammation to carcinoma were identified as toll-like receptor-3 (TLR-3) and toll-like receptor adaptor molecule (TRIP).
Results: Ultraviolet B radiation induces cross-linking RNA-RNA, DNA pyrimidine dimer formation and oxidation of guanine to 8-oxy-7,8-dihydroguanosine, which activates TLR-3 to produce pterygium and/or cancer cells. When interleukin-1 (IL-1) is activated by intense or continuous inflammatory and metabolic stresses, a pingueculum, pterygium or "normal" cells can become a cancerous. A certain degree of immune system suppression is also noted.
Conclusion: Periorbital and conjunctival squamous cell carcinoma are associated with exposure to UV-B radiation. Inflammation is essential. By illustration of the mechanisms that transpire from initial insult to manifestation of a lesion, researchers can uncover possible areas susceptible to blockage and inhibition.

Conjunctivitis 2012. The Mother of All Conjunctivitis

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Conjunctivitis is a common malady, and is usually an innocuous illness causing tolerable inconvenience and sometimes a welcome break from work or school for the victim. In February 2012, Kingston experienced an epidemic of conjunctivitis, which was neither innocuous nor tolerable but was the "mother of all conjunctivitis". My office saw over 300 cases, with severe symptoms and signs. This paper describes the clinical features and shows examples of the severity of these cases. Acute symptoms lasted about three to six weeks in the typical case, but went on to eight weeks in some, and was followed by superficial corneal infiltrate with superficial punctate keratitis (SPK) lasting several months in some cases. This is the worst conjunctivitis epidemic I have ever seen in a career spanning from 1974 to the present time. In 1980, there was a much more widespread epidemic which involved the Caribbean, Miami in the United States of America and some Central American countries. In that epidemic, we experienced loss of about three eyes at the Kingston Public Hospital. In this epidemic, I did not see any patients who lost eyes but the morbidity was much worse. Several patients developed the infection while they were recovering from ocular surgery. Examples of the clinical features and the complications will be shown on video presentations.

Deep Anterior Lamellar Keratoplasty (DALK): First Year Review at the Caribbean Eye Institute

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Objectives: To review the first year's experience with deep anterior lamellar keratoplasty (DALK) at the Caribbean

Eye Institute (CEI) for the outcomes of best corrected visual acuity (BCVA), refractive error and complications.

Methods: The records of all DALK done by the author at CEI between March 4, 2011 and March 3, 2012 were reviewed. The 'Big Bubble Technique' was attempted in all and achieved in three eyes. Manual dissection was used to complete the rest.

Results: Big bubble DALK was attempted in 11 eyes of eleven patients with keratoconus. Nine were successful with two being converted to penetrating keratoplasty (PK) due to perforations. The male to female ratio was 3:6, age range 13–53 years. A small perforation was observed in the very first patient (RA) who went on to have a successful DALK. Follow-up data were available for over one year in eight patients. One patient who lives outside Trinidad and Tobago was last seen six months after surgery. Baring of Descemet's membrane was achieved in all cases. Preoperative best visual acuity (VA) was 20/60 in one eye and ranged from 20/100 to Count Fingers (CF) in the other eight. At last follow-up, all patients had BCVA $\geq$ 20/40. The patient who lives abroad was last seen six months postoperatively with a BCVA of 20/40. Total perforations during the study period was three *ie* 27% of 11 eyes. Two (18%) were converted to full thickness grafts. One patient presented at age 53 years with apical scarring in the right eye. She developed a steroid-induced cataract at nine months post DALK. Phacoemulsification cataract extraction (PECE) was done at 13 months. Her final BCVA was 20/40 at four months after PECE. Patient RA, whose DALK was completed in spite of a small perforation, developed scrolling of the endothelium which was successfully addressed by air tamponade at nine days post DALK. Her BCVA at 13 months was 20/30. No case of stromal rejection was recorded.

Conclusions: The learning curve in DALK is slow and painstaking. When a big bubble is not achieved, the dissection is tedious but usually some bubbles are found in the right plane. In the end, we are all attempting to bare Descemet's membrane and to avoid perforation. The former will result in better BCVA and the latter preserves the patient's endothelium, thus avoiding endothelial rejection and ensuing graft failure.