

P-18 **IMPACT OF FLUOROQUINOLONES AND AMINOGLYCOSIDES ON *P. AERUGINOSA* VIRULENCE FACTOR PRODUCTION AND CYTOTOXICITY**

¹Stephen Kaye*, ¹Keri McLean, ^{1,2}Daniel M Foulkes, ²Marta Sloniecka, ²Dominic Byrne, ¹Atikah S Haneef, ³Craig Winstanley, ⁴Neil G Berry, ²David G Fernig, ¹Department of Eye and Vision Science, Institute of Ageing and Chronic Disease, University of Liverpool, UK; ²Department of Biochemistry, Institute of Integrative Biology, University of Liverpool, UK; ³Department of Clinical Infection, Institute of Infection and Global Health, University of Liverpool, UK; ⁴Department of Chemistry, University of Liverpool, UK

10.1136/bmjophth-2022-BCM.15

*Correspondence – Stephen Kaye: S.B.Kaye@liverpool.ac.uk

Introduction *Pseudomonas aeruginosa* injects toxins, ExoS or ExoU, into host cells via the type III secretion system (T3SS) which destroy cells and help evade the immune system. First-line fluoroquinolones demonstrate better in vitro activity against *P. aeruginosa* but in certain clinical situations aminoglycosides are more effective. We evaluate the effects of fluoroquinolones (moxifloxacin and ciprofloxacin) and aminoglycosides (tobramycin and gentamycin) on T3SS and toxin expression, and the associated toxicity in corneal epithelial cell infection models.

Methods Expression levels of pcrV (T3SS needle component) from ExoU-expressing PA103 and ExoS-expressing PA76026 after 16h incubation in each antimicrobial was detected using western blotting. qRT PCR detected mRNA levels of ExoU, ExoS, pcrV and ExsA (T3SS activating factor) after PA103 and PA76026 were exposed to tobramycin and moxifloxacin. LIVE/DEAD and LDH assays after 24h evaluated how the antimicrobials influenced acute cytotoxicity in a HCE-T cell scratch and infection model.

Results Tobramycin significantly reduced pcrV in both strains by 50.5–74.0% compared to the fluoroquinolones ($p=0.001$ and 0.003), even at low concentrations. Fluoroquinolones significantly increased pcrV by 57.0–81.8% ($p=0.004$ and 0.003). mRNA levels of ExoU, ExoS, pcrV and ExsA were reduced by tobramycin but moxifloxacin increased pcrV, ExsA and ExoS. Tobramycin, despite more bacterial expansion compared to the same relative concentrations of fluoroquinolones, reduced ExoU/ExoS cytotoxicity and allowed complete wound healing.

Discussion Tobramycin downregulates T3SS expression and reduces ExoS/ExoU mediated cytotoxicity which protects infected HCE-T cells even at low concentrations. Fluoroquinolones however upregulated T3SS and do not negate the cytotoxic effects.

P-19 **TRANSEPIHELIAL PTK/LIMITED NON TOPOIGRAPHIC PRK COMBINED WITH CORNEAL CROSSLINKING FOR KERATOCONUS**

Hatch Mukherjee*, Spyros Pipis, Yunfei Yang, Adriana Santos. Colchester Eye Centre, East Suffolk and North East Essex Trust, Colchester, UK

10.1136/bmjophth-2022-BCM.16

*Correspondence - Hatch Mukherjee: hatch.mukherjee@gmail.com

Objective To evaluate the outcomes of combined excimer laser PTK/limited PRK combined with corneal crosslinking in the management of keratoconus.

Methods and Analysis Data were analysed from a retrospective cohort of eyes undergoing PTK epithelial removal or limited PRK combined with corneal crosslinking. Patients undergoing PRK were either contact lens intolerant or were considering alternate surgical therapy including corneal transplantation. Data included uncorrected and best corrected vision, refraction and OCT topographic findings. Treatments were performed using a TECHNOLAS® TENEO™ 2 (Bausch & Lomb) and CXL with Avedro KXL (Glaukos) according to a modified protocol.

Results 24 eyes were treated using combined Excimer laser PTK or limited non-topographic transepithelial PRK depending on intervention protocol with >3 month follow-up. Postoperative best corrected visual acuity improved by a mean of 0.42 LOGMAR units (SD 0.37, range 0.1 to 1.4) ($p<0.005$). All eyes had improvement of BCVA. Mean absolute spherical refractive error decreased by 0.56 D (SD 1.26, range -2.5 to 2) ($p<0.05$). Postoperative spherical error increased in a few cases (3/24, 12%) Mean absolute refractive cylinder decreased by 1.46D (SD 2.3 range -4.75 to 7) ($p<0.05$). Limited increase of astigmatism occurred in 2 (8.3%) cases. There were no postoperative complications noted.

Conclusion PTK/limited non topographic PRK combined with CXL may offer improvement to corrected visual acuity compared to CXL alone.

P-20 **GALILEI TOPOGRAPHY VS ANTERION TOPOGRAPHY. SAME PATIENT, DIFFERENT RESULTS?**

Mustafa Yusuf*, Chung Bong, Akash Dharni. Calderdale Royal Hospital, Halifax, UK

10.1136/bmjophth-2022-BCM.17

*Correspondence - Mustafa Yusuf: mustafayusuf@nhs.net

Objective Corneal topography is a crucial part of the decision making process in clinics throughout the country. numerous machines are available, therefore it is important if a patient has topography performed on one device it produces consistent results on another device. Our service is somewhat unique with eye clinics running on two different sites with two different topography machines. This study aims to compare the commonly used Galilei machine with the newer Anterion machine to see if the measurements are comparable.

Methods and Analysis We identified 20 patients (between the ages of 15 and 40) with a diagnosis of keratoconus who had undergone both Galilei and Anterion topography. Only those patients who had undergone both scans within a 2-week time frame (and should therefore have very similar topography readings) were included. We compared Flat Sim K, Steep Sim K, K Max and Pachymetry readings between the two devices.

Results The mean difference in Flat Sim K was 0.41. The largest difference was 1.1. The mean difference in Steep Sim K was 0.52. The largest difference 1.8. The mean difference in K Max was 0.73. The largest difference 2.1. The mean difference in pachymetry was 11 μ m. The largest difference 21 μ m.

Conclusion There was considerable differences in measurements between the two devices, with K Max and Pachymetry showing the most disparity. We therefore recommend caution when deciding upon, for example keratoconus progression, in a patient who has undergone topography on two different devices.