Solutions and staining: what we thought we knew

Nick Atkins reviews the recent Netherlands Contact Lens Congress

The NCC 2008 (contact lens in Dutch is one word, hence the apparent missing 'L') took place last month with a number of the UK ex-pat researchers and speakers convening in Eindhoven. An impressive 1,200 delegates attended over two days, which challenges BCLA conference attendances, albeit for a shorter meeting. Certainly the NCC has the edge for attracting local practitioners as some 95 per cent or more delegates are Dutch, with the remainder largely coming from Belgium and Germany. This is perhaps a reflection on the proactive approach to contact lenses they have in Holland where penetration of the vision correction market is around double that of the UK.

Hot topics

The organisers should be congratulated for having the foresight to concentrate much of the programme on the current 'hot-topics' of solutions and staining. **Associate Professor Eric Papas** presented data on solution-induced corneal staining (SICS) from the Institute for Eye Research which has culminated with the production of the IER Matrix (IERM) as an alternative perspective on solution-related staining to the Andrasko Staining Grid (ASG). The key difference between the two grids, apart from the sensible absence of red colouration, is the methodology behind the way the data is obtained. The IERM takes more of a 'real world' approach in that patients wear their prescribed lenses with the solution of choice and are monitored for staining at their routine aftercare. Additionally, the data presented is totally different in that ASG shows the percentage staining across the cornea whereas IERM shows the percentage of patients who present with staining in at least four out of five corneal zones, as per CCLRU grading scale. This explains the different results between the two tables with only hydrogen peroxide coming out of both studies with a completely 'clean bill of health'. Papas also stated that their work suggested that SICS could persist during the day, contrary to previous reports of it being a transient early morning phenomenon.

Lyndon Jones: facts and fiction quiz

Pat Caroline: RGP trends

Lyndon Jones, ably assisted by **Caroline Christie**, conducted an excellent interactive quiz entitled 'Lenscare: facts, fiction and trivia' which showed up the lack of knowledge many practitioners have of the solutions they use every day. Despite a long-term interest in lens care, even this delegate learned something from this enjoyable session – namely, unlike other cases, the CIBA Micro-Bloc case needs to be kept permanently moist to maintain its anti-microbial properties.

There were two parallel sessions on presbyopia and corneal staining which divided the audience down the middle. While corneal staining might not seem a 'sexy' topic, the overall conclusion of the session and the renewed focus on this area in light of recent events is that we don't know what we thought we knew about corneal staining.

There were conflicting opinions on whether staining was a precursor to infection. **Dr Brian Levy** stated that his thorough literature review shows no evidence for such a link and **Dr Arthur Epstein** stated that the level of staining with certain solutions and their subsequent withdrawal due to increased microbial keratitis meant there must be a link.

Northumberland optometrist **Peter Frampton** revealed that most of what we know about fluorescein staining dates back to the apparently exhaustive work of Norn in the 1960s and 70s. He stated that the conventional wisdom that dots of staining are individual damaged cells is incorrect and fluorescein has been shown to stain healthy cells with fluorescence based on the amount of stain absorbed. He said that rose bengal was toxic to the corneal epithelium and can therefore stain healthy cells and that lissamine green, while not perfect, was preferable due to its non-toxic profile. Papas also quoted Stapleton's finding that there is no link between solution staining and infection. He also observed that levels of corneal staining and infiltrates have been shown to be independent of one another.

Quest for the perfect CL

On other subject areas, Papas opened the lecture programme with 'Elimination of ocular discomfort: How to make a perfect contact lens'. He discussed the fact that despite the time and effort put into delivering advances in technology the contact lens experience is still not a universally comfortable one. He reviewed the latest research to help understand why this is, and he described the areas of focus for current and future research projects. He showed data supporting that, despite what many practitioners think, modulus only has an influence on comfort for the first 20 minutes post insertion after which time patients report no difference in comfort between higher and lower modulus materials. Work he published with Ozkan also showed that the use of drops on lens insertion improves

subjective comfort. There also appears to be a relationship between poor quality of vision and lower comfort levels, although only the slightest correlation with lens comfort and corneal staining levels – the other big topic for the meeting. New work using gas jet aesthesiometry also shows that symptoms correlate poorly with ocular sensitivity. Interestingly, inserting a new lens after five hours, while improving comfort and dryness immediately upon insertion, doesn't improve comfort at the end of the day versus just keeping the same pair in. He suggested that the lubricity of the lens surface and reducing the interaction/friction of the lens at the lid wiper area of the lid margin will be important in enhancing comfort and reducing symptoms.

CLs for children

Dr Jeffery Walline presented data on the subject of fitting children with contact lenses. The results of the Contact Lenses in Paediatrics (CLIP) study investigated some of the myths surrounding fitting children under 13 and teenagers and looking at various metrics between the two age groups.

In the study, the average age of the younger children was 11 years, with 15 being the average age of the teenagers. He showed that typically there was no difference in fitting time, although the younger group on average took 11 minutes longer with insertion and removal training which as he stated is a delegated function in the majority of practices. Interestingly for this fan of RGP fitting to children, he showed that 70 per cent of patients stayed in the RGP lenses they were fitted with compared to 90 per cent with soft lenses. He stated that the risk-benefit scenario for contact lens wear was the same for children and teenagers and concluded that age was not a valid criterion for not fitting contact lenses.

The same speaker later reviewed 'Studies in myopia control' by discussing some of the previously unsuccessful attempts to slow myopia progression and then comparing results from the US CRAYON (Corneal Reshaping and Yearly Observation of Nearsightedness) Study with that of the Hong Kong-based LORIC study on myopia control with orthokeratology lens fitting. In CRAYON, children with no previous lens wear were randomly assigned Paragon CRT lenses, alignment fitting RGP lenses or hydrogel disposable lenses and monitored for two years. Seventy per cent (28 out of 40) of the CRT patients were still wearing their lenses and this group showed an increased anterior and vitreous chamber depth of about 50 per cent less than the other two lens wearing groups. This supports the LORIC study with **Dr Walline** stating that while the mechanism is not completely understood there is enough evidence to support fitting ortho-k lenses to children to try to prevent myopia progression.

Age is found not to be a valid criterion for not fitting contact lenses

Myopic reduction

Associate Professor Pauline Cho shared the Hong Kong experience of ortho-k, concurring that it is effective for myopic reduction. However, as only one patient has so far volunteered to come out of the lenses for a long period of time to assess the permanence of the results, it is still not known how long the effect remains. She described the theory of hyperopic retinal defocus that is thought to play a role in the way ortho-k reduces axial length elongation in children. She also addressed some of the concerns about infections and shared clinical pearls for successful ortho-k practice.

Associate Professor Pat Caroline discussed 'Emerging trends in GP lenses' where he reviewed a wide range of modern innovations in the gas-permeable lens industry. He took the now almost obligatory side swipe at a certain Australian professor who, during his time at a northern UK university, stated that RGPs would no longer be fitted in 2010. Some of these technological advances include new designs for keratoconus, modern contact lens corneal reshaping, advances in semi-scleral GP lenses and advances in presbyopic GP lens designs. He presented a series of fascinating case histories in which each of these lenses proved successful in addressing the physical and optical needs of the patient. Caroline observed that improved understanding of the relationship between the peripheral corneal curve, limbal area and the scleral topography and the increased use of an OCT providing scleral radius data, will improve the success of fitting 13-18mm diameter semi-scleral lenses. Additionally, he showed how modern manufacturing techniques enabling expansion of the use of quadrant specific and reverse curves also have benefits in keratoconic fitting.

One of the benefits of the Dutch meeting is that English is well spoken, although many of the lectures were from local speakers in their native tongue. Following Patrick Caroline it was interesting to attend BCLA Fellow **Ron Beerton** describing in Dutch (but fortunately for this delegate with English slide text) a new RGP fitting service. It is supplied by local company Procornea currently for the Dutch market only, whereby customised RGP lenses can be fitted from topography. The lenses are individually designed for each eye with the promise of better comfort and vision. Most Dutch practitioners are ahead of their UK counterparts in owning a topographer, and with around a quarter of fits still being RGP lenses, this service finally brings the long-standing promise of simplified and more accurate RGP fitting by using the empirical 'topographer to lathe to eye' approach.

As president of the BCLA I was very kindly invited to attend by the conference organising committee as a guest of the association of Dutch contact lens specialists (ANVC). The next meeting is in two years time and this delegate will be happy to return.

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