Comfort response to rigid and soft hyper transmissible contact lenses used for continuous wear

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Purpose

A key determinant of contact lens success in the marketplace is initial and ongoing comfort. In the past, it has been generally accepted that rigid lenses are less comfortable than soft lenses when worn on a daily wear basis, although once the wearer has adapted to rigid lenses, they are perceived as being as comfortable as soft lenses. For rigid lenses to be commercially successful for continuous wear (CW), it will need to be demonstrated that wearers can rapidly adapt to this modality of lens wear.

Methods

Subjects

100 subjects were stratified as follows:
- 25 existing soft lens wearers were fitted with the soft study lens.
- 25 existing rigid lens wearers were fitted with the rigid study lens.
- 25 neophytes were randomly assigned to wear the rigid study lens.
- 25 neophytes were randomly assigned to wear the soft study lens.

Lenses

Two hyper permeable lenses (Table 1).

Experimental protocol

Subjects attended for the following visits:
- Lens dispensing.
- After one week of daily wear (to allow for familiarity with lens handling and care).
- On the morning following the first night of overnight lens wear which immediately followed the ‘daily wear’ visit.
- 2 weeks after commencing CW.
- 1, 3, 6, 9, 12 months after commencing CW.

Methods continued

Comfort assessment

At each visit, subjective comfort was assessed using an annotated vertical analogue comfort scale (Figure 1), whereby 0 represented ‘causes pain’ and 100 represented ‘excellent’ comfort.

Statistical analysis

Comfort scores were evaluated using a repeated measures analysis of variance whereby study visit was included as a within-subject factor and lens type (soft or rigid) and experience (neophyte or experience) were assessed as within-subject factors.

Results

Figure 2 shows the comfort response of all subjects, including those who discontinued at various stages during the study.

Figure 3 is the same construction as Figure 2 except that the data for discontinued subjects are excluded from this graph. It is evident that there is little difference in the pattern of comfort change over the study between these two figures.

Conclusions

Neophytes who wish to wear hyper transmissible rigid lenses on a continuous wear basis can achieve levels of comfort equivalent to hyper transmissible soft lenses after only eight days if they follow the type of wearing schedule described in this study (one week of daily wear followed by continuous wear).

The statistical analysis demonstrated a significant visit x lens x experience interaction (F = 4.7, p < 0.0004). Inspection of Figures 2 and 3 confirms that there was an increase in comfort scores for the neophyte rigid lens group such that there was little difference in comfort between the four clinical groups after one night of sleeping in lenses (which followed one week of daily wear) and at subsequent visits.

References