INTRODUCTION

Despite most patients having an apparently normal precorneal tear film and no apparent pathology, contact lens wear with both silicone hydrogels (SH) and conventional hydrogels (CH) is associated with a significant proportion of lens wearers reporting symptoms of dryness and discomfort. 1,2 3

Both lens types, in particular SH lenses worn on a continuous wear modality, place great demands on the tear film. As in-eye solutions of varying viscosity are the primary means of improving symptoms of discomfort and dryness for lens wearers, it is important to examine their efficacy. 4 5 6

AIM

To investigate the influence of three in-eye solutions on subjective comfort during contact lens wear.

i. Saline

ii. In-eye lubricant of lower viscosity (Lub1)

iii. In-eye lubricant of higher viscosity (Lub2)

METHODS

Randomised (lenses and solution), single masked, clinical study

Subjects (n=15), experienced soft contact lens (SCL) wearers (Table 1).

- 6 hours contralateral lens wear - Focus Night and Day (FND) SH lens and 1-Day Acuvue (AV) CH lens
- Four separate visits - baseline (no solution use) and 3 visits with solution use (Saline, Lub1, Lub2)
- Minimum washout period of 2 days between each solution.
- Solutions were instilled (2 drops bilaterally) immediately after lens insertion, and after 2 and 4 hours of lens wear.
- Subjects rating of comfort and dryness was rated:
  a) Prior to lens insertion
  b) Immediately after lens insertion and
  c) After 6 hours lens wear.
- Comfort symptoms were rated on a scale from 1 – 100, with 1 = least comfort and dryness, 0 = no symptoms, 4 = severe symptoms.

RESULTS

Post - Insertion

In comparison to baseline, subjective comfort ratings for all groups was less on lens insertion.

However, this decrease in comfort rating was significantly less (p < 0.05) with use of Lub1 in comparison to use of saline, Lub2 or no solution, for both SH and CH lens wear (Figure 1 & 2).

6 hours post-insertion

In comparison to baseline and post-insertion, subjective comfort ratings for all groups was less following 6hrs lens wear.

At this time there was no statistically significant difference in subjective comfort rating amongst the various groups (Figure 1 & 2).

There was a significant reduction (p < 0.05) in frequency of dryness symptoms with the use of Lub1 and Lub2 in comparison to no solution use with SH lens wear (Figure 3).

Table 1: Subject data

| Age (yrs) | 22.7 ± 1.5 |
| CL wear experience (yrs) | 4.5 ± 3.3 |
| Average daily CL wear time (hrs) | 11.8 ± 3.9 |
| Previous CL lubricant use | 54% (Yes), 46% (No) |

Figure 1: Differential subjective comfort (post - pre) with silicone hydrogels

Figure 2: Differential subjective comfort (post - pre) with silicone hydrogels

Figure 3: Frequency of dryness symptoms - post 6 hours

STATISTICAL METHODS

- Parametric data analysed using repeated measures ANOVA followed by multiple comparisons using Bonferroni correction.
- Non parametric data analysed using Friedman test followed by Wilcoxon Signed Ranks test.
- Level of significance – p < 0.05

CONCLUSIONS

- Post-insertion use of in-eye lubricants was effective in reducing initial sensation of discomfort with SH and CH wear. However, higher lubricant viscosity did not necessarily offer the best relief from symptoms.
- Repeated solution use over 6 hours did not translate into a significant improvement in longer-term comfort, regardless of lubricant or lens type.
- When in-eye lubricants were used, there was reduced frequency of dryness symptoms for SH wearers, compared to no solution use.
- General end of day SCL comfort seems to be less influenced by the use and viscosity of in-eye lubricants and is more likely affected by a range of factors such as contact lens – cornea interaction, ocular physiology, lens type and environmental considerations.

REFERENCES

1. Chalmers RL et al. The role of dryness symptoms in discontinuation of wear and unscheduled lens removals in extended wear of silicone hydrogel lenses. ARVO 2002, Abstract #3388b

ACKNOWLEDGEMENTS

This work was supported by the Australian Government CRC scheme.

The authors would also like to thank i-media communications for their assistance with the poster.

VISION EXCELLENCE FOR ALL PEOPLE