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Comparison of Immediate Effects Oon Usage of Dual Polymer Artificial Tears on Changes in Tear Film Characteristics

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Introduction: This study aimed to evaluate the short-term efficacy of artificial tears (AT) instillation on tear film quality and quantity utilising two dual polymer artificial tears; Systane Hydration preservative (SH) and non-preservative (SHUD) in 60 minutes observation period compared to normal saline. **Materials and methods:** One hundred eyes of 50 participants involved in this prospective, double-masked randomised study. Viscosity and pH of both AT were evaluated using Rheometer and digital pH-meter respectively prior to tear film characteristics assessment. Tear break-up time (TBUT) and tear meniscus height (TMH) were measured at baseline, 5, 15 and 60 minutes after instillation. Tear ferning pattern (TFP) were compared between baseline and 60 minutes after instillation. One-way analysis of variance (ANOVA) was used to evaluate the effects of both AT instillation. Independent T-test was employed to compare between the two groups (SH vs SHUD) for each specific time-interval. P-value of 0.05 was set as the level of significance. **Results:** The viscosity of SH and SHUD was 0.0267Pa.s and 0.03273Pa.s respectively with pH of 7.85 for SH and 7.74 for SHUD. Both AT showed significant increment in TBUT between baseline and 15 minutes (SH: 5.82 ± 1.063, $p = 0.01$; SHUD: 6.02 ± 0.979, $p<0.001$), and 60 minutes (SH: 6.22 ± 0.616, $p<0.001$; SHUD: 6.34 ± 0.658, $p<0.001$). SHUD demonstrated significant increment in TMH at every measurement taken (0.1996 ± 0.02449, $p<0.001$ at 5min, 0.2038 ± 0.02276, $p<0.001$ at 15min and 0.2068 ± 0.02094, $p<0.001$ at 60min). Likewise, in SH group, significant increment in TMH at 15 minutes (0.1994 ± 0.02325, $p < 0.001$) and 60 minutes (0.2012±0.02379, $p<0.001$) were noted. With regards to TFP, both groups revealed improvement in TF grading (both, $p<0.001$) at 60 minutes. No significant improvement was noted in control group. **Conclusion:** Both SH and SHUD improved tear film characteristics at 60 minutes following instillation. However, SHUD is more effective as faster improvements were noted in all intended parameters.