Dry eye is matched by increased intrasubject variability in tear osmolarity as confirmed by machine learning approach El ojo seco está relacionado con un aumento intrasujeto de la variabilidad de osmolaridad lagrimal confirmado por tecnología de aprendiza

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Objective: Because of high variability, tear film osmolarity measures have been questioned in dry eye assessment. Understanding the origin of such variability would aid data interpretation. This study aims to evaluate osmolarity variability in a clinical setting. Material and methods: Twenty dry eyes and 20 control patients were evaluated. Three consecutive osmolarity measurements per eye at 5 min intervals were obtained. Variability was represented by the difference between both extreme readings per eye. Machine learning techniques were used to quantify discrimination capacity of tear osmolarity for dry eye. Results: Mean osmolarities in the control and dry eye groups were 295.1 ± 7.3 mOsm/L and 300.6 ± 11.2 mOsm/L, respectively (P = .004). Osmolarity

variabilities were 7.5 ± 3.6 mOsm/L and 16.7 ± 11.9 mOsm/L, for the control and dry eye groups, respectively (P < .001). Based on osmolarity, a logistic classifier showed an 85% classification accuracy. Conclusions: In the clinical setting, both mean osmolarity and osmolarity variability in the dry eye group were significantly higher than in the control group. Machine learning techniques showed good classification accuracy. It is concluded that higher variability of tear osmolarity is a dry eye feature.