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Comparison of dry eye tests between symptomatic and asymptomatic age-matched females

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PURPOSE: To quantify the strength of association of dry eye (DE) diagnostic tests to DE symptoms in an age-matched female cohort.

METHODS: Twenty females symptomatic of DE (Ocular Surface Disease Index, OSDI, ≥ 13) were age-matched with 20 asymptomatic females (OSDI < 13) in this cross-sectional study. Non-invasive tear breakup time (NIBUT), ocular staining, meibum quality, number of obstructed glands, lid wiper epitheliopathy (LWE), Marx's line placement, eyelid margin score, Schirmer's test, meibography, and visual acuity were compared between the two groups.

RESULTS: Twenty participant-pairs completed the study. The age (median/interquartile range(IQR)) of the symptomatic group was (60/15) and the asymptomatic group was (62/15). The diagnostic tests (median/IQR, p-value) that were significantly different between the symptomatic group vs. the asymptomatic group were OSDI (35.4/35.4 vs. 3.1/6.7, $p < 0.01$), NIBUT (2.1s/0.7s vs. 3.0s/3.0s, $p = 0.01$), meibum quality (3.0/0.0 grade units vs. 2.0/1.0 grade units, $p < 0.01$), number of obstructed glands (7.0/2.0 glands vs. 5.0/4.8 glands, $p < 0.01$), and ocular staining (5.5/3.8 grade units vs. 0.5/1.0 grade units, $p < 0.01$). The diagnostic tests (area under curve (AUC), odds ratio (OR)) that were most strongly associated with DE symptoms were ocular staining (0.93, 5.0), number of glands obstructed (0.79, 2.6), meibum quality (0.76, 2.4), and NIBUT (0.74, 3.2) (all $p < 0.05$). There was no significant difference between the two groups for the other DE diagnostic tests (all $p > 0.05$), and similarly, no significant association to DE symptoms (all $p > 0.05$).

CONCLUSION: The diagnostic tests that were most strongly associated with DE symptoms in older women were ocular staining, meibum quality, number of glands obstructed, and tear film stability.

