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Relation between dietary essential fatty acid intake and dry eye disease and meibomian gland dysfunction in postmenopausal women

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Abstract

Purpose:
To evaluate the relationship between omega-3 (n-3) and omega-6 (n-6) fatty acids with dry eye disease (DED) and meibomian gland dysfunction (MGD)

Design:
Cross-sectional study

Methods:
Postmenopausal women (n=439) underwent a clinical evaluation and completed the Vio Food Frequency Questionnaire to estimate their dietary intake of n-3s and n-6s. Subjects were categorized into two binary classifications based upon whether or not they had (1) DED and (2) MGD. Mean intake of dietary fatty acids were compared with two-sample t-tests. Univariate logistic regression models were used to estimate the odds ratios for each condition associated with each quintile of n-3s, n-6s, and n-6:n-3 ratios.

Results:
For DED vs non-DED, there were no significant differences in n-3 intake (1.95 ± 1.47 g vs 1.92 ± 1.24 g, p=0.86), n-6 intake (15.58 ± 11.56 g vs 15.44 ± 10.61 g, p=0.91), and n-6:n-3 (8.30 ± 2.57 vs 8.30 ± 2.57, p=0.99). For MGD vs non-MGD, there were no significant differences in n-3 intake (1.87 ± 1.35 vs 1.96 ± 1.39, p=0.61), n-6 intake (15.26 ± 11.85 vs 15.62 ± 10.93, p=0.80), and n-6:n-3 (8.35 ± 2.94 vs 8.28 ± 2.42, p=0.84). The odds ratios for DED did not differ significantly from 1.0 for n-3, n-6, or n-6:n-3. High n-3 consumption (OR=0.22 [0.06-0.78]) and moderate n-6 consumption (OR=0.37 [0.15-0.91]) were associated with a decreased frequency of MGD.

Conclusions:
Dietary consumption of n-3s and n-6s showed no association with DED, but high n-3 consumption and moderate n-6 consumption were protective against MGD in this large sample of postmenopausal women.