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Ratio of Omega-6 to Omega-3 Fatty Acids and Childhood Asthma

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Abstract

Asthma is a leading cause of morbidity for children and is a major public health problem in Australia. Ecological and temporal data suggest that dietary factors may have a role in recent increases in the prevalence of asthma. Aim: The aim of conducting this study was to investigate whether childhood asthma was associated with the ratio of omega 6 (n-6) to omega 3 (n-3) fatty acids in the diet (n-6:n-3). Method: The Western Australian Pregnancy Cohort Study is a prospective birth cohort of 2602 children. Using a nested case-control cross-sectional study design within this cohort, a group of children were identified as cases with current asthma at 6 or at 8 years of age or as controls with no asthma at 6 or at 8 years. Dietary details including n-6 and n-3 fatty acid intake data were collected by parent response to a questionnaire when the children were 8 years old. Logistical regression was used to compare quartiles of n-6:n-3 intake in cases and

controls. Adjustment was made for covariates: gender, gestational age, breastfeeding, older siblings, maternal smoking during pregnancy, maternal age, maternal asthma, child's current age in months, body mass index, total energy intake, and antioxidant intake (vitamins A, C, E, and zinc). Results: A response rate of 83% was achieved by providing complete data from 335 children [49% cases with current asthma ($n = 166$), 51% controls ($n = 169$)]. Following adjustment for covariates the association between the ratio of n-6:n-3 fatty acids and risk for current asthma was statistically significant ($p = 0.022$). Conclusion: We found evidence for a modulatory effect of the dietary n-6:n-3 fatty acid ratio on the presence of asthma in children. Our results provide evidence that promotion of a diet with increased n-3 fatty acids and reduced n-6 fatty acids to protect children against symptoms of asthma is warranted.

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