Abstract


Red blood cell fatty acids are associated with depression in a case-control study of adolescents.

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INTRODUCTION: Epidemiological studies suggest that reduced intakes and/or blood levels of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are associated with increased risk for depression in adults, but data on adolescents are scarce. The objective of this study was to determine whether red blood cell (RBC) levels of EPA+DHA (the omega-3 index) and/or the overall RBC fatty acid profile differ between depressed adolescents (cases) and non-depressed adolescents (controls).

PATIENTS AND METHODS: We measured the RBC fatty acid composition of cases admitted to the hospital for depression (n=150) and compared it to that of controls (n=161).

RESULTS: Cases and controls had similar ages, gender proportions, and body mass index (BMI) distributions, but there was a significant difference in racial/ethnic composition due to differences in recruitment sites. The unadjusted odds ratio for case status was 0.72 (95% CI; 0.55-0.95) for a 1% absolute increase in the omega-3 index. A multivariable logistic regression model was used to determine which fatty acids were useful in classifying cases and controls; BMI, age, gender, and race/ethnicity were forced into the model. Seven fatty acids were selected (DHA, myristic, stearic, oleic, trans linoleic, trans palmitoleic, and alpha-linolenic acids) to optimize the model fit to the data. In the adjusted model, the odds ratio was 0.67 (95% CI; 0.49-0.93) for a 1 SD increase in DHA. Adding the seven fatty acid profile to the basic model increased the area under the ROC curve by 12.6% (7.5%-17.6%).

DISCUSSION AND CONCLUSION: These findings support the hypothesis that adolescent depression is associated with a perturbed RBC fatty acid pattern which includes a reduced omega-3 index. Intervention studies with EPA and DHA should be conducted in this vulnerable population for which few, safe therapeutic options currently exist.

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