

Effect of fish oil, arginine, and doxorubicin chemotherapy on remission and survival time for dogs with lymphoma: a double-blind, randomized placebo-controlled study.

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BACKGROUND: Polyunsaturated n-3 fatty acids have been shown to inhibit the growth and metastasis of tumors. This double-blind, randomized study was designed to evaluate the hypothesis that polyunsaturated n-3 fatty acids can improve metabolic parameters, decrease chemical indices of inflammation, enhance quality of life, and extend disease free interval and survival time for dogs treated for lymphoblastic lymphoma with doxorubicin chemotherapy. **METHODS:** Thirty-two dogs with lymphoma were randomized to receive one of two diets supplemented with menhaden fish oil and arginine (experimental diet) or an otherwise identical diet supplemented with soybean oil (control diet). Diets were fed before and after remission was attained with up to five dosages of doxorubicin. Parameters examined included blood concentrations of glucose, lactic acid, and insulin in response to glucose and diet tolerance tests; alpha-1 acid glycoprotein; tumor necrosis factor; interleukin-6; body weight; amino acid profiles; resting energy expenditure; disease free interval (DFI); survival time (ST); and clinical performance scores. **RESULTS:** Dogs fed the experimental diet had significantly ($P < 0.05$) higher mean serum levels of the n-3 fatty acids docosahexaenoic acid (C22:6) and eicosapentaenoic acid (C20:5) compared with controls. Higher serum levels of C22:6 and C20:5 were associated with lesser ($P < 0.05$) plasma lactic acid responses to intravenous glucose and diet tolerance testing. Increasing C22:6 levels were significantly ($P < 0.05$) associated with longer DFI and ST for dogs with Stage III lymphoma fed the experimental diet. **CONCLUSIONS:** Fatty acids of the n-3 series normalize elevated blood lactic acid in a dose-dependent manner, resulting in an increase in DFI and ST for dogs with lymphoma. Copyright 2000 American Cancer Society.

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