

S3 – Lifestyle Intervention in Obese Chinese Adolescents with Nonalcoholic Fatty Liver Disease: A Randomized Controlled Study

D.F.Y. Chan, H.K. So, C.M. Chow, S.C.N. Hui, R.S.M. Chan, A.M. Li, M.M. Sea, W.C.W. Chu, M Chan, J Woo, E.A.S. Nelson

The Chinese University of Hong Kong

Introduction: The prevalence of nonalcoholic fatty liver disease (NAFLD) in children is increasing. This study evaluated the efficacy of Lifestyle modification programmes for NAFLD adolescents. The primary outcome was the degree of change of intra-hepatic triglyceride content (IHTC) in NAFLD adolescents after the intervention.

Methods: Post-pubertal Chinese adolescents aged 14 -18 years with primary obesity attending the Obesity and Lipid Disorder Clinic in the PWH were invited to join the study. Recruited subjects underwent magnetic resonance spectroscopy (MRS) for documentation and diagnosis of NAFLD. Totally, 52 were diagnosed as having NAFLD. Twenty-six subjects were randomized to the LMP intervention and 26 received usual care in the control group. Intervention group: during the first 16 weeks, the subjects in the LMP intervention group came for counselling sessions weekly for the 1st four months and then bi-monthly at subsequent months for 52 weeks. Control group: diet and exercise advice was provided while subjects in the control group were attending routine consultations at the Obesity Clinic every 4 months by attending physicians.

Results: Overall, the compliance rate of both groups was 89% (intervention group: 85%; control group: 92%). The change in the IHTC between the intervention and control groups from baseline to week-16 ($p = 0.029$). Ten (6 from the intervention group and 4 from the control group) of the 52 (i.e. 19.2%) enrolled subjects had complete remission of NAFLD after 16 weeks of the study. Body fat percentage was significantly lower in the intervention group than the control group (mean difference 4.1%, $p = 0.001$) after the 16 weeks intervention. The laboratory variables including aspartate aminotransferase (AST) / alanine aminotransferase (ALT) ratio, insulin and homeostasis model assessment (HOMA) were improved significantly paralleling the reduction in body size in the intervention group. By multivariate analysis, only reduction in body fat and the baseline IHTC remained independent factors associated with remission of NAFLD. At week-68, the body fat was significantly lower in the intervention group than the control group (mean difference 4.6%, $p = 0.025$). The quantitative insulin sensitivity check index (QUICKI) and high density lipoprotein (HDL) were improved significantly in both groups compared with the baseline. The improvement in the AST/ALT ratio in the intervention group from baseline to week-68 was significant ($p = 0.017$).

Conclusion: A lifestyle intervention of 16-week was effective in reducing body fat and IHTC in obese Chinese adolescents with NAFLD.

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