

Response of Blood Lipids to Mild Exercise Training In Arthritis Patients

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Abstract

Introduction: Dyslipidaemia increase had been known in the recent studies as risk factor of coronary artery diseases. Experimental exercise training had been suggested in several studies with different populations to control the coronary artery disorders via lipid profile. Present study was performed to assess the role of mild exercise training on the plasma lipid level in 100 patients (77 male) with arthritis.

Methods: Arthritis patients were randomly selected among patients who were referred into the one obesity clinic in Tehran and they were equally allocated into the trial and control groups. Data were collected between October and December 2011. Our study intervention was mild exercise training and Aerobic exercise was performed in five days in a week. This was a semi experimental study, ($P \leq 0.05$).

Results: There were no differences of total cholesterol, triglyceride, HDL and LDL in both control and training groups significantly.

Conclusion: It seems that there was not enough activity in mild exercise to motivate the fat metabolism. Some additive therapeutic modalities such as dietary regimen control is needed for better effect.

Keywords: Mild physical exercise; Cholesterol; Arthritis; Triglyceride; HDL; LDL

Introduction

Dyslipidaemia increase had been known in the recent studies as risk factor of coronary artery diseases [1]. High levels of serum total cholesterol, triglycerides, low density lipoprotein (LDL), very low density lipoprotein (VLDL) are significantly related to coronary heart disease [2]. Role of lipids in pathogenesis of coronary heart diseases and related vascular diseases had been known in the previous studies [3]. American college of cardiology reported LDL-C as proven and triglycerides as might risk factors of coronary heart diseases [4]. Experimental exercise training had been suggested in several studies for different populations such as healthy normal-weight, obese men and women and even patients with diabetes hypertensive and coronary heart disease [5-8].

Cross sectional studies with including men and women in all ages showed that aerobic activities had positive association with HDL and inverse association with total triglyceride level. We had not conclude causative effects from these studies due to several confounding variables such as genetical factors and different life style and total body fat mass [6, 9]. We had some specific main questions about impact of experimental exercise training on patients with disabilities or movement limitations. Full exercise training is not applicable in patients with arthritis and mild

exercise training is suggested for them. Is mild exercise training alone enough for arthritis patients or diet intervention is needed for suitable effects? The researcher have examined the effects of exercise in arthritis patients who could not do exercise with moderate to severe intensity. Present study was performed for assessment the role of mild exercise training on the plasma lipid level in 100 patients with arthritis.

Methods

Participants in the present randomized clinical trial study were assessed for determining role of exercise training alone on lipid profiles of arthritis patients. Arthritis patients were randomly selected from patients who were referred into the one obesity clinic in Tehran city. Our trial had parallel design and study patients equally allocated into the trial and control groups. Arthritis in patients was confirmed by expert rheumatologist with radiological study. Trial inclusion criteria were chronic arthritis patients and patients with limitation in walking were excluded from the study. Study was approved in ethical research committee of Baqyatallah University of medical sciences and health services and all of patients sign inform consents.

Study data were collected between October and December 2011 in one of obesity clinics in Tehran city. Study patients were randomly allocated into the trial and control groups with simple randomization method. Study allocation was performed by one of the research teams and laboratory technicians and main research were blinded about patients groups and interventions.

Our study intervention was mild exercise training which was out of sport club and Aerobic exercise was performed in five days in each week. Exercise was walking on level. Exercise intensity according rate perceived exertion (RPE) was 11. Patients follow their exercise in eight weeks. Exercise was started in first week with 10 minutes and with each week; 10 minutes were added until achieving 30 minutes walking every day and was constant in fourth week. Exercise was performed by patients continuously or in three 10 minutes bouts. Patients of control group followed their regular life style.

Our primary and secondary outcomes were level of total cholesterol (TC), high density lipoprotein (HDL) and low density lipoprotein (LDL) and triglyceride (TG). Outcome measurements were assessed at the beginning and final of study intervention at one laboratory with same method for all of study patients.

Statistical analysis

Data of study patients were entered into the SPSS Ver 16.0. In primary analysis lipid profiles were compared between two groups with independent sample student t-test. All p-values less than 0.05 were assumed as significant results.

Results

In present randomised clinical trial, 100 patients (77 male) were included and mean of age in study patients was 55.27±8.19 years. In bivariate analysis mea of age in trial groups had no significant difference with mean of age in control group (55.96±7.09 Vs 55.88±5.64; P=0.11). Male to female ratio had not significant differences between trial and control groups (38/12 Vs 39/11; P=0.81). Mean of serum level of total cholesterol in patients of trial group after exercise training had no significant difference with cholesterol level in control patients (232.58±22.57 Vs 234.48±15.84; P=0.37).

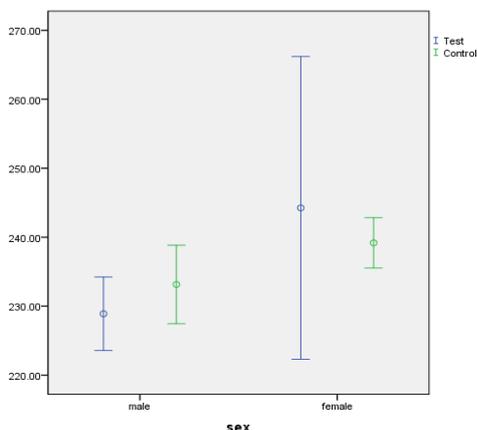


Figure 1. Mean and standard deviation of serum level of total cholesterol between two groups according their gender

After mild exercise training, mean of serum level of triglyceride in patients of trial group had no significant difference with patients of control group (230.66±10.05 Vs 234.38±13.73; P=0.46).

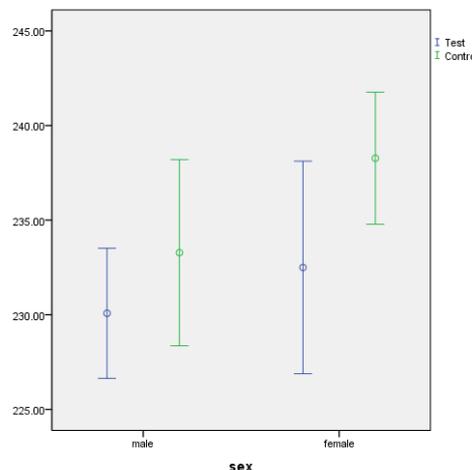


Figure 2. Mean and standard deviation of serum level of triglyceride between two groups according their gender

Patients had mild exercise training in their daily program had slightly higher serum HDL level in compare with patients of control group (40.62±4.73 Vs 39.78±4.69; P=0.94).

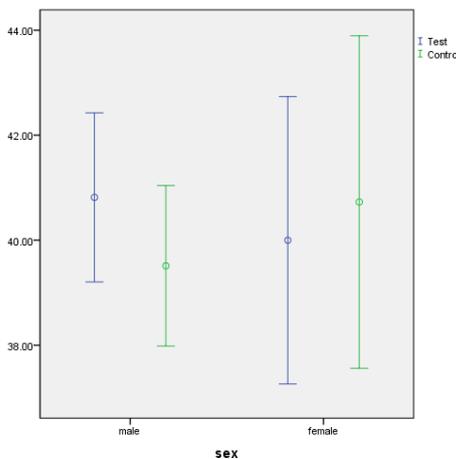


Figure 3. Mean and standard deviation of serum level of HDL between two groups according their gender

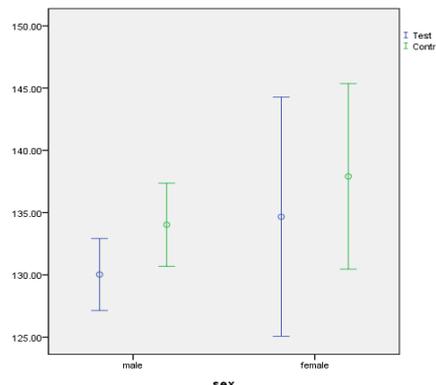


Figure 4. Mean and standard deviation of serum level of LDL between two groups according their gender

There is same no significant difference was seen in about mean of serum level of LDL between patients of trial and control group [131.14 ± 10.66 Vs 134.88 ± 10.49 ; $P=0.96$].

Conclusion

Findings of the present study showed that mild exercise had no significant impact on lipid profile in patients with arthritis. Although we matched age and sex between trial and control groups, we had not seen significant differences between serum level of lipid profiles between two study groups and even in some indices after trial exercise we had higher levels. Physical exercise had some benefits in arthritis patients. Some studies reported that exercise had positive impact on function, pain and muscle strength in arthritis patients [10-13]. In patients with moderate functional limitations, early mobilization after arthroplasty improved functional ability [14, 15]. Several previous studies had strongly reported that inactivity and decline in cardiorespiratory endurance had been taken part in risk of coronary artery diseases [16, 17]. In noted studies, physical exercises showed its negative impact on the pathogenesis of coronary artery disease via an increase in HDL-C level and reduce of serum level total triglyceride level [7, 18].

Although, both of cross-sectional and longitudinal epidemiological studies were seen in above studies for confirmation of role of physical activity on decrease in prevalence of coronary artery disorders, most of them were performed on healthy peoples. Some other and might confounding variables such as genetical factors and self-selection of active life style via decrease in total body and abdominal fat mass had been contributed into the impact of exercise in some peoples [6, 9]. In some arthritis patients due to extensive arthritis or bone damages, patients could not performed complete form of exercise and only mild exercise training can prepare some physical activity for them. We think that study patients had not enough activity in mild exercise format to beginning fat metabolism and some additive therapeutic modalities such as control dietary regimen is needed for better results.

Present study had some limitations; firstly, we had not any data about level of disability in arthritis patients. Patients with different disability index had different response to mild exercise. Secondly; sample size in study was low and we purpose next studies with greater sample size for better determining causative effects. Thirdly in study setting several confounding variables such as diet of patients, level of arthritis, severity of arthritis and psychosocial factors were confounded study results and next studies with controlling these variables were suggested.

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