بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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MONA MAGHRABY

STUDY OF THE EFFECT OF INTRADIALYTIC EXERCISE ON THE BONE PROFILE IN PREVALENT HEMODIALYSIS PATIENTS

Thesis

Submitted for partial fulfillment of Master Degree in Internal Medicine

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تاثير التمرينات اثناء جلسه الغسيل على علامات العظام لدى مرضى الفشل الكلوي الذين على غسيل الكلى بانتظام

رسالة

توطئة للحصول علي درجة الماجستير في الباطنة العامة

مقدمة من

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List of Abbreviations

CKD	:	Chronic Kidney Disease
MBD	:	Mineral Bone Disease
PTH	:	Parathormone
ALP	:	Alkaline Phosphatase
BALP	:	Bone Alkaline Phosphatase
IDE	:	Intradialytic Exercise
KIDEGO	:	Kidney Disease Improving Global Outcomes
ESRD	:	End Stage Renal Disease
CRP	:	C reactive protein
CV	:	Cardiovascular
ROD	:	Renal Osteodystrophy
BMD	:	Bone Mineral Density
RPE	:	Rate of Perceived Exertion
GFR	:	Glomerular Filtration Rate
DM	:	Diabetes Mellitus
ISHD	:	Ischemic Heart Disease
COPD	:	Chronic Obstructive Pulmonary Disease
DBP	:	Vitamin D binding protein
HD	:	Hemodialysis
SHPT	:	Secondary hyperparathyroidism
PO4	:	Phosphorus
EBCT	:	electron beam computed tomography
FDA	:	Food and Drug Administration
RAAS	:	Renin angiotensin aldosterone system
Po4	:	Phosphorus
CUA	:	Calci-uremic arteriolopathy
PA	:	Physical activity
6 MWT	:	six minutes walk test

METs	**:**	Metabolic equivalent tasks
SPBT	**:**	Short Performance Battery Tests
BMI	**:**	Body Mass Index
HR	**:**	Heart Rate
ELISA	**:**	Enzyme-Linked Immunosorbent Assay
CBC	**:**	Complete Blood Picture
Ca	**:**	Calcium
EP	**:**	Exercise Program
HGB	**:**	Hemoglobin

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Abstract

Background: Chronic kidney disease increases the risk of fractures and altered bone and mineral metabolism. Exercise training could be a non-pharmacological therapeutic intervention. The aim of this work is to evaluate the effect of intradialytic exercise training on bone markers in hemodialysis (HD) patients.

Results: Forty adult patients on regular HD participated in the study. Twenty of which completed 3 months supervised intradialytic cycling exercise program and 20 served as controls. At baseline, there was no difference between both groups regarding age, sex, physical performance, and laboratory studies performed. After 3 months, the exercise group showed significant improvement in short performance battery test (SPBT) total score ($P<0.001$) associated with significant decrease in serum parathormone (PTH) ($P=0.01$) and increase in serum alkaline phosphatase (ALP) and bone specific alkaline phosphatase (BALP) ($P<0.05$ and $P<0.001$ respectively). Controls did not show similar change in SPBT or laboratory studies. There was no significant change in serum calcium or phosphorus in both groups. A significant positive correlation was observed between SPBT scores post-exercise and both BALP and ALP levels ($r=0.432$, $P=0.01$ and $r=0.645$, $P<0.01$ respectively). Also, an inverse relation was observed between SPBT and PTH ($r=-0.503$, $P=0.01$).

Conclusion: Intradialytic cycling exercise program resulted in significant increase in physical performance associated with decrease in serum PTH and increase in BALP and ALP in HD patients. This indicates the positive influence of exercise not only on physical performance in dialysis patients but also on bone metabolism.

Keywords: Intradialytic exercise, Bone-specific alkaline phosphatase, Bone biomarkers, PTH