

Dedication

To

My father soul

My mother

My family,

Friends and lecturers

To whoever has contributed

To the fulfillment of this work.

And it is my great pleasure

To extent special dedication

To Alribat University Hospital.

I dedicate this work

fatima

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Mom who support and give me a hope, purpose
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Abbreviations

A	Absorbance
CHD	Coronary heart disease
CK-MB	Creatine kinase MB
CRP	C - reactive protein
CVD	Cerebrovascular Disease
ESR	Erythrocyte Sedimentation Rrate
ETS	Environmental Tobacco Smoke
FCH	Familial Combined Hyperlipoproteinemia
GVHD	Graft Versus Host Disease
HDL	High Density Lipoprotein
hsCRP	High sensitivity C-reactive protein
IDL	Intermediate Density Lipoprotein
IL-1 β	Interleukin-1 β
IL-6	Interleukin-6
LDL	Low Density Lipoprotein
NO	Nitric Oxide
P	Probability of significance

PVD	Peripheral vascular Disease
SD	Standard Deviation
SHS	Second Hand Smoke
SPSS	Statistical Package for Social Science
TF	Tissue Factor
TFPI-1	Tissue Factor Pathway Inhibiter-1
TNF- α	Tumor Necrosis Factor- α
VLDL	Very Low Density Lipoprotein

Abstract

This study was performed in Khartoum state during the period from January to May 2011. The aim of the study is to compare the sensitivity of C – reactive protein (CRP) and cholesterol as early marker of cardiovascular diseases in Sudanese smokers.

75 blood samples were collected from Sudanese smokers and 75 healthy non smokers as a control group for the comparison. The test and control groups were ages matches and range from 18 to 60 years. Serum cholesterol was estimated by spectrophotometer (Biosystem 310), and CRP level was estimated by automation technique (Mindary BS 300).

There was a significant increase in both the C-reactive protein level and cholesterol level in the test group of smokers when compared with non smokers ($4.26 \pm .84 \text{mg/L}$ versus $1.75 \pm .37 \text{mg/L}$), ($P=0.000$), and ($185 \pm 41 \text{mg/dL}$ versus $163 \pm 23 \text{mg/dL}$) respectively ($P = 0.000$). According to the duration of cigarettes smoking the study observed significant increase in the mean of CRP level in the three groups of smokers when compared with control group, ($6.26 \pm .91 \text{mg/L}$, $p=.023$; $3.57 \pm .48 \text{mg/L}$, $p=.004$; $3.62 \pm .43 \text{mg/L}$, $P=.011$) respectively. Whereas there is no significant difference in cholesterol level in group(1) ≤ 5 when compared with non smokers group ($p=.118$). The study record a significant increase

in cholesterol level in group(2) 6-15 and (3) >15 when compared with non smokers group, (182±43mg/dL) (p=.012), (196±42mg/dL) (p=.003) respectively. Also with number of cigarettes smoked per day the study observed a significant increase in CRP level in group(1)≤10 and (2) 11-20 when compared to non smokers, (4.46±.85mg/L) (p=.009), (4.19±.82mg/L) (p=.002) respectively, but there is insignificant increase in group(3) >20 when compared to non smokers(p=.070). Whereas cholesterol level show significant increase in the three groups of smokers (185±39mg/dL, p=.004; 185±41mg/dL, p=.010; 18 ±50mg/dL, p=.000) respectively. The study recorded no significant correlation between CRP with both the duration of cigarettes smoking per year and number per day (p=.101, .447) respectively.

In conclusion: The study revealed that C – reactive protein level increase in short period of smoking, in contrast cholesterol level increase in a long period of smoking.

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اجريت هذه الدراسة في ولاية الخرطوم في الفترة ما بين يناير الى مايو 2011 لمقارنة حساسية بروتين C المتفاعل و الكوليسترول كمؤشر لامراض القلب في المدخنين السودانيين. خمسة وسبعون عينة دم تم جمعها من مدخنين سودانيين تراوح اعمارهم من 18 الى 60 سنة، و خمسة وسبعون اصحاء غير مدخنين للمقارنة. تم قياس مستوى بروتين C المتفاعل بالطريقة الذاتية وتم قياس مستوى الكوليسترول عن طريق الانزيمات بواسطة جهاز الاسبكتروفوتوميتر. وجد ان هناك زيادة ذات دلالة احصائية في مستوى بروتين C المتفاعل في المدخنين

(mg/L 84.± 4.2) مقارنة مع غير المدخنين (P = 0.000.±1.75) ، (37mg/L) و مستوى الكوليسترول في المدخنين (41mg/dL±185) مقارنة مع غير المدخنين

(P = 0.000) ، (163±23mg/dL) . اعتمادا على فترة التدخين بالسنوات هناك زيادة معنوية في متوسط بروتين C المتفاعل في المجموعات الثلاثة (≥ 5 سنوات) (6-15 سنة) (< 15 سنة) مقارنة مع مجموعة الغير مدخنين. (91mg/L,±6.26) ، (3.62±.43mg/L, 3.57±.48mg/L) ، بينما ليس هناك اختلاف في مستوى الكوليسترول في المجموعة الاولى (≥ 5 سنوات) (p>0.05) ولكن سجلت هذه الدراسة زيادة معنوية في مستوى الكوليسترول في المجموعة الثانية و الثالثة من المدخنين مقارنة مع الغير مدخنين (p≤0.05±182) ، (196±42mg/dL) ، (43mg/dL).

واعتمادا على عدد السيجارات فى اليوم وجد ان هنالك زيادة معنوية فى مستوى بروتين C المتفاعل فى المجموعة رقم واحد واثنين (85mg/L), ± 4.46) و $(4.19 \pm 0.82\text{mg/L}$)

$(p \leq 0.05)$. وليس هناك زيادة ذات دلالة معنوية فى المجموعة الثالثة (< 20) من المدخنين مقارنة مع الغير مدخنين ($p > 0.05$) بينما اظهر الكوليسترول زيادة ذات دلالة معنوية فى المجموعات الثلاثة ($185 \pm 41\text{mg/dL}$, $186 \pm 50\text{mg/dL}$) ± 185) $(p \leq 0.05)$

ليس هناك علاقة ذات دلالة احصائية بين بروتين C المتفاعل مع مدة التدخين بالسنوات وعدد السيجارات فى اليوم ($P > 0.05$) ..

اعلى متوسط لبروتين C المتفاعل شوهد خلال الخمس سنوات الاولى من بداية التدخين اما الكوليسترول يصل اعلى متوسط بعد 6 سنة من بداية التدخين.

الخاتمة: بروتين C المتفاعل يزيد فى مدة قصيرة من بدء التدخين اما الكوليسترول فيزيد بعد 6 سنوات من بدء التدخين.