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Cardiovascular Risks Assessment of Tobacco Smokers (Cigarette & Bidi) using hs CRP & Lipid Profile in Muzaffarnagar City

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Abstract

Cigarette and Bidi smoking are quite common in Uttar Pradesh.The present study was conducted in Muzaffarnagar city of Western Uttar Pradesh to assess the cardiovascular status of young male chronic smokers by estimating their hsCRP and lipid levels.A total of 100 subjects divided into two groups of control and smokers having a chronic history of smoking were taken for the study.Proper exclusion criteria were applied to the case selection.After applying the standard stastical tests we found that dyslipdemia and hsCRP level significantly increased ($p<.05$)* in smokers($2.72+2.02$)* as compared to normal population($1.13+1.07$). So we can confer these smokers with higher hs CRP levels and dyslipidemias are at higher risk of CADs in future.

Keyword: *Smokers Cigarette Bidi hsCRP Lipid Profile Cardiovascular Status CAD*

Introduction

Muzaffarnagar is a district located in Western UttarPradesh with a popupation of around 40 lakh (2011 census). Here tobacco smoking (cigarette & bidi) are quite common as rest of Uttar Pradesh. According to NFHS (National Family Health Survey) conducted in UP in late 90 s revealed that 34% of adult males and 3.1% of adult females are current smokers.Rules and Regulation for tobacco use are almost absent in the state. As we all know WHO report 2002[1] tobacco is the most preventable cause of cardiovascular mortality world wide.Tobacco smoking has resulted in two fold increase in risk of Coronary Artery Disease (CAD).

In present study we tried to assess the levels of hsCRP (High Sensitivity C Reactive Protein) and lipid profiles in chronic tobacco smokers.Both hsCRP level [2]and dyslipdemia [3] are established risk factors for CAD. American Heart Association AHA has described level of hsCRP >3 mg /l as higher risk of CAD.

WHO predicts that 70% of death from smoking related illness will occur in developing cuntaries by 2020.

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Aims & Objective of the study

To assess the levels of hsCRP and dylipidemias in tobacco smokers as a marker of CAD in Muzaffarnagar city.

Material & Method

The present study was conducted in the Department of Physiology Muzaffarnagar Medical College over a perod of 1 year from June 2017 to June 2018 .More than 50 chronic male smokers with a history of smoking cigarette or bidi for more than 5 years in the age group 18-45 years ,which are otherwise healthy, were taken as cases.

50 subjects in the same age group who don't have any history of tobacco consumption in any form were

taken as controls.

The subjects having history of any cardiovascular event (Angina,Myocardial Infarction, Coronary syndrome, Stroke), known hypertensive, diabetics, renal disease, drug abuse, COPD were not taken in the study.

Proper informed consent was taken in written form signed by the subjects before conducting the study.

Ehical Clearance from society of human experimentation was taken before starting the study.

The subjects were divided into to 2 groups of 50 each

Group 1 - Controls (normal subjects)

Group 2 - Cases (Tobacco Smokers – cigarette or bidi)

These groups were evaluated for following tests

1 . Serum hs CRP levels

2 . Serum Lipid Profiles

Serum hs CRP level was estimated using ELISA kit method.

Lipid Profile Estimation –Triglycerides (TG) was estimated using GPO PAP method,total cholesterol was estimated by Wybenga &Pollegi method,HDL by spectrophotometry ,VLDL & LDL by formulas.

Stastical Analysis

It was done by sotware SPSS 17 & Microsoft excel. Result was expressed as mean+SD . Unpaired t –test was used for comparison between the groups. p value < .05 was taken as significant.

Findings

Table 1 Serum hsCRP levels of two groups

Parameter	Control	Smoker
hsCRP(mg/L)	1.13±1.07	2.72±2.02*

hsCRP in tobacco smokers was statistically significant p<.05 as marked by *

Table 2 LIPID PROFILES OF TWO GROUPS(*All values in mg /dl)*

Parameters	Control	Smoker
Total Cholesterol	184.97±40.43	245.57±91.32*
Serum Triglycerides	115.91±28.2	122.41±45.17
HDL	56.52±6.0	54.31±4.13*
LDL	123.39±28.17	183.40±78.45*
VLDL	23.73±5.88	24.4±5.76
T Choles./HDL	3.3±.80	4.5±1.55*
LDL/HDL	1.80±.55	3.39±1.4*
NonHDL/HDL	2.3±.8	3.3±1.1*

All the values marked by * are statistically significant values with p <.05 .

Discussions

hs CRP levels has been found to be significantly increased in smokers as compared to control with p coming out be less than .05.The mean values of hsCRP is coming out be 2.72+2.02 mg/l which is accordance with AHA recommendation where values 1-3 recommend moderate risk and values >3 indicate high risks of CAD.These values in smokers are just approaching very high risk category.Tonstad et al[4] , Yanbaeva et al [5], Wannamethee[6], LoweGDO et al[7] and Cushman et al [8] all have shown rise of hsCRP in smokers as compared to past or never smokers.Nicotine present in tobacco smoke is responsible for creation of chronic inflammatory state Celermajer et al[9] and Burke et al[10]. Tobacco smoke leads to activation of IL -6 and IL-β which are increased in response to lung inflammation and implicated in induction of hs CRP.These findings support the idea that induction or exacerbation of inflammation could be a mechanisn by which smiking promotes Atherosclerosis.

Total cholesterol , LDL , Atherogenic indexes-T.Chol/HDL , LDL/HDL & Non HDL/HDL are found to be increased in our study in smokers as compared to normal population.HDL is found to be significantly decresed in smokers in our study as compared to normal

population.These findings are in consistence with similar results in past studies conducted by Gupta et al[3],Yusuf et al [11], Khurana et al[12] & Venkatesan et al[13]. The basis of dyslipidemias in smokers is sympathomimetic effect of nicotine . Release of adrenaline leads to lipolysis by increasing activity of lipolytic lipase enzyme in adipose tissue.This leads to increase in serum concentration of free fatty acids , triglycerides , LDL and VLDL.

Conclusion

The people who smoke tobacco (cigarette or bidi) with elevated hsCRP levels and dyslipidemias are at higher risks of CAD in future.

Conflict of Interest None

Source of Fundings Self

Ethical Clearance From medical society on human experimentation taken.

References

1. WHO Report 2002 Reducing risks, promoting healthy life. Geneva WHO 2002 ; 47-98
2. Tracy RP ,Lemaitre RN, Pstaty BM, Ives DG, Evans RW, Cushman M et al –Relation of CRP to risk of CVD in elderly.Results from Cardiovascular health study and rural health promotion project.Arterioscler Thromb Vase Biol 1997 ;17:11217.
3. GuptaV,Tiwari S, Agarwal CG- Effect of cigarette smoking on insulin resistance and lipid profile in asymptomatic adult.IJPP 2006
4. Tonstad S,Cowan et al –CRP as a predictor of disease in smokers and former smokers.International Journal of Clinical Practise 2009; 63:1634-1641
5. Yanbaeva ,Denter MA et al –Systemic effects of smoking:Chest 2007;131:1557-66
6. Wannamethee SG,Lowe GD,Shaper AG et al.Association between cigarette smoking,pipe smoking and smoking cessation and haemostatic and inflammatory marker for cardiovascular disease. Eur Heart J 2005;26:1765-73
7. LoweGDO,Yarnell JWG,Rumley A et al C-reactive protein ,fibrin D –dimer and incident ischaemic heart disease in speedwell study are inflammation and fibrin turnover linked in pathogenesis?;Arterioscler Thromb Vasc Biol 2001;21:603-10
8. Cushman M,Arnold AM,Psaty BM,Manolio TA, Kuller et al –C –reactive protein and 10 year incidence of coronary heart disease in older men and women;the cardiovascular health study; Circulation, 2005;112:25-31
9. Celermajer DS ,Sorensen KE, GeorgakopoulosD, et al Cigarette smoking is associated with dose related and potentially reversible impairment of endothelium dependent dilation in health young adults;Circulation:1993:88 2149-2155
10. Burke A ,Fitzgerald GA et al- Oxidative stress and smoking induced vascular injury; Prog Cardiovascular Dis : (2003) :46;79-90
11. Yusuf PS ,Hawkens S , Ounpuu S et al Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countaries :case control study;Lancet :2004;vol.364, no.9438 pp. 937-952
12. Khurana M, Sharma, Khandelwal P. D et al. Lipid profile in smokers and tobacco chewers a comparative study;J Assoc Physician India :2000 sep ; 48 (9):895-7
13. Venkatesan A ,Hemlatha A,Bobby Zachariah,Sathiyapaiya V –Effects of smoking on lipid profile and lipid peroxidation in normal subjects;IJPP: 2006, 50 (3) 273-278.