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Research Article

ASSESSMENT OF QUANTITATIVE D.DIMER LEVEL AMONG SUDANESE SMOKERS

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ABSTRACT

Background: Cigarette smoking is one of the largest preventable causes of death and illness in the world, smoking does not just kill people, it ruins their lives through chronic illness, including respiratory disease, peripheral vascular disease and non-fatal stroke, cigarette there are may different varieties of cigarette tobacoo,it is has been suggested that smoking –related diseases and thrombosis.
Purpose: This study aimed to assess D. dimer level in Sudanese smokers.
Methods: Seventy five Sudanese smokers were recruited to participate in this cross-sectional study; D.dimer quantitative level was determined for each participant from citrated plasma by quantitative immunoassay using I.CHROMA ™ Kit and reader.
Results: In this study increase duration of smoking more than 10 years was significantly associated with the elevation in the D.dimer. The results were correlated with age, number of cigarette; Duration of smoking was correlated with the D.dimer
Conclusion: In summary we concluded that D-Dimer is significantly elevated among Sudanese cigrate smokers.

INTRODUCTION

Cigarette smoking is one of the largest preventable causes of death and illness in the world. smoking does not just kill people , it ruins their lives through chronic illness including respiratory disease, peripheral Vascular disease and non –fatal stroke. Cigarettes there are may different varieties of cigarettes tobacoo. One thing that all cigarettes have in common is that they deliver nicotine to the lungs. a puff on a Cigarettes results in rapid absorption of nicotine to the brain by the arterial circulation. Smokers absorb an average 1-2 mg of nicotine from each cigarette.

Cigarette smoking is markedly influence by social norms and other environmental, there is a strong link between smoking and many psychiatric disorders, including mood disorders. Smoking is associated with a variety of markers of inflammation such as C-reactive protein, white cell count, fibrinogen (West Robert and shiffman, 2007). D.dimer is a fibrin degradation product (or FDP) a small protein fragment present in the blood after a blood clot is degraded by fibrinolysis. Measurment of plasma D.dimer level has been shown as a useful diagnostic aid in suspected deep veinhrombosis (D.V.T) in medical patients (Adam et asl., 2009; Sharrock *et al*., 1995). It is named because it contains two cross linked D. fragments of the fibrin protein.

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D.dimer concentration may be determine by a blood test to help diagnosis thrombosis. The antigen fibrin D.dimer is the primary enzymatic degradation product of cross linked fibrin by plasmin systemic values of D.dimer are an index of fibrin turnover in the circulation and a single measurement may be adequate to assess the fibrinolytic state (Rao Kmk, 1994). The prothrombotic effects of exposure to cigarette smoke have been repeatedly demonstrated to cause alteration in platelet function , antithrombotic prothrombotic factors and fibrinolytic factors. platelet dysfunction: platelet isolated from smokers exhibited an increased stimulation as well as spontaneous aggregation (Rival *et al*., 1987; Fusegawa *et al*., 1999). When indivdual smoke, the toxins from cigarette smoke enter blood; the toxins in blood make the blood more viscous and increase chance of clot formation, blood clot can cause health problems deep vein thrombosis (D.V.T).

Cigarette smoking may decrease availability of platelet – derived nitric oxide and decrease platelet sensitivity to exogenous nitric oxide leading to increased activation and adhesion (Blache, 1995). Since its introduction in the 1990s, D.dimer has become an important test performed in patients with suspected thrombotic disorders. Previous studies have shown smoking increases the risk of (CVD) include haemostatic disturbances and vascular endothelial dysfunction. A positive result of D.dimer can indicate thrombosis but does not rule out other potential causes (Ichiki *et al*., 1996).

Several factors, other than pulmonary embolism or deep vein thrombosis (D.V.T) are associated with positive D.dimer results (Ranasinghe and Bonser, 2010; Epiney *et al*., 2005).

MATERIALS AND METHODS

An observational cross –sectional study was conducted from October to December 2014 at Alneelain University, Faculty of Medical Laboratory Sciences Smokers except those have history of venous thrombosis, hypertention, and Diabetes were enrolled in this study. A total of 3.5 ml of citrated anti coagulated venous blood samples were collected (9 part blood to 1 part anticoagulant) from 75 sudanese smokers males, their age range between 17 to 60 years. The samples were centrifuged at 4000RPM for 15 minutes to obtain platelet-poor plasma (PPP).D-dimer was measured by I.CHROMATM Kit D-dimer single test, it is invitro test based on an immune technique, for the rapid determination of the fibrin degradation product D-dimer in plasma.

Data analysis

The SPSS-version 16 software was used for statistical analysis. T-Test, Chi-Square Test and ANOVA were used to calculate P value. Differences were considered statistically significant when P value ≤ 0.05.

RESULTS

Age and D.dimer

*Of the 75 smokers,48 smokers(64%) with age ≤ 30years D.dimer level was 1138.6 ng/ml , of the other 27smokers(36%) ≥ 30years was D.dimer level 2926.1 ng/ml. Asignificant difference was obtained between these means (*P.value: 0*.0100) show in Table (1).

Figure 1. Correlation between D.dimer and Age

Parameter	≤ 30 years	> 30 years	P. Value
	Mean	Mean	
D-dimer ng/ml (normal values: <250 ng/ml)	1138.6	2926.1	0.010

Smoking duration and D.dimer

*Of the75smokers ,44(58%) with smoking ≤ 10 years D.dimer level was 1004.9 ng/ml of other 31 smokers(41%) with smoking ≥ 10 years D.dimer levels was 2885.1ng/ml. Asignificant difference between these means (*P.value*: 0.002).

Table 2. correlation between duration of smoking and D.dimer

Parameter	≤10 years	>10 years	P. Value
	Mean	Mean	
D-dimer ng/ml (normal values: <250 ng/ml)	1004.9	2885.1	0.002

Number of cigarette/day and D.dimer

Smokers were classified into two groups according to number of cigrate per day ; groupe one included those smoke 10 or less cigrate per day (46, 62 %) and group tow those soke more than 10 cigrate per day (29, 38%) ; the mean of D-dimer level was 909.9 ng/ml and 3165.5 ng/ml respectively with statisticaly significant differenc (*P.value* :0.001).

Parameter	≤10 10 cigerate/day	>10 cigerate/day	P. Value
	Mean	Mean	
D-dimer ng/ml (normal values: <250 ng/ml)	909.9	3165.5	0.001

DISCUSSION

The present study demonstrated that, the D-Dimer level among smokers was significantly elevated. This findings was inagreement with that of Gerald shper *et al* in 2004 which reported that significant increase in D.dimer level among smokers (Danesh *et al*., 2004).Our finding also was nagreement with that of Goya wannamethee *et al.* (2005) who reported a high D-Dimer level among cigrate smokers and suggested that activation of haemostasis potential mechanisms by which cigarette and pipe/cigar smoking increase cardiovascular risk. The precent study also repretd that there was asignificant association between number of cigrate per day and D-Dimer level. Moreover there was assignificant association also between D-Dimer level and duration of smoking.

Conclusion

These finding conclude that smoking appears to be associated with an elevated D-Dimer level and Smoking cessation should be encouraged.

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