EFFECT OF SMOKING ON DIABETIC NEPHROPATHY

Sara Elfath1, Tawfeeg Wahbi2 and Liza Hamd1

1,2,3Department of Chemical Pathology, Faculty of Medical Laboratory Sciences, University of Khartoum-Sudan.

*Corresponding Author: Sara Elfath
Department of Chemical Pathology, Faculty of Medical Laboratory Sciences, University of Khartoum-Sudan.

ABSTRACT
Background: Diabetic nephropathy is considered to be one of the major complications of diabetes mellitus, and its prevalence is continuously progressing worldwide. Its associated with increase cardiovascular mortality. Methodology: urine from 100 diabetic male patients (50 smokers, 50 nonsmokers) were analyzed for albumin: creatinine ratio. Albumin measured using immunoturbidiometric method albc2 using Copas analyzer and creatinine measured by jaffe reaction. Results: the result of this study showed an association between smoking cigarette and prevalence of diabetic nephropathy (p-value 0.000). And no significant association between age with albumin creatinine ratio(p-value 0.459). Conclusion: smoking cigarette has a significant relationship with prevalence of diabetic nephropathy.

KEYWORDS: diabetic nephropathy, smoking.

INTRODUCTION
Diabetic nephropathy is considered to be one of the major complication of diabetes mellitus and its prevalence is continuously progressing worldwide. It associated with increased cardiovascular mortality. Progression of this disease is accelerated by various factors such as hypertension, chewing tobacco, alcoholism and smoking. The pathophysiological mechanism underlying health effects of smoking are complex, smoking was demonstrated to increase plasma endothelin levels and its associated with formation of free radicals.

Diabetic smokers are usually associated with glomerular hypertrophy followed by albuminuria. Albuminuria is commonly used for early detection of diabetic nephropathy and it’s the first sign of the disease. Patients considered to have albuminuria when/urine albumin creatinine ratio >30mg/g). Diabetic nephropathy has been categorized into microalbuminuria and macroalbuminuria based on the amount of albumin excreted. Smoking has been reported to be associated with the progression of diabetic nephropathy, In prospective studies progression to diabetic nephropathy was more frequent in smokers than non-smokers. Many studies have also evaluated the association between smoking cessation and diabetic nephropathy. Smoking had also been to be associated with nephropathy in non-diabetic population. Subjects classified as smokers had higher prevalence of albuminuria and abnormal renal function.

Our study was aimed to investigate the association between cigarette smoking and diabetic nephropathy.

MATERIALS AND METHOD
This study was conducted as case control study on 100 normotensive, nonalcoholic males patients diagnosed with diabetes (50 diabetic smoker as cases and 50 diabetic non-smoker as control). The study was conducted in AL Khartoum state in Soba and Alribat teaching hospitals. Spot urine samples were collected from participants and analyzed immediately for albumin and creatinine, albumin was measured by immunoturbidiometric method albc2 using Copas Integra analyzer and creatinine measured by jaffe reaction and ratio was Obtained. Diabetic nephropathy defined by the presence of albuminuria (spot urine albumin/creatinine ratio >30mg/g). female patients were excluded from the study because of the small proportion of female in the community who smoked.

RESULTS
This study showed a significant association between smoking cigarette and albumin/creatinine ratio(ACR) with a mean diabetic smoker (41.42±12.02) and diabetic nonsmoker mean (26.91±4.91) (p-value 0.00) as reported in table(1). Our study was conducted on 50 diabetic smoker male with mean age of (53.68±9.204).
and 50 diabetic nonsmokers with mean age of 
(48.56±10.190), there was no significant association 
between mean age and albumin creatinine ratio see 
table(1).

Table 1: show comparison between ACR and age among study group.

<table>
<thead>
<tr>
<th>Age</th>
<th>Mean</th>
<th>Diabetic Smoker</th>
<th>Diabetic non smoker</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>9.20</td>
<td>10.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albumin /creatinine mean</td>
<td>41.42</td>
<td>26.91</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>12.020</td>
<td>4.91</td>
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</tbody>
</table>

DISCUSSION
Diabetic nephropathy is one of the major complication of 
diabetes mellitus, it’s progression was also associated 
with many factors such as hypertension, alcoholism and 
cigarette smoking. Smoking effect on the basement 
membrane of the nephrons causing glomerular 
hypertrophy. Smoking promotes the progression of all 
astages of diabetic nephropathy to a similar extent, both in 
type 1 and type 2 diabetes, it increases the risk for 
development of microalbuminuria and accelerates progression 
from the stage of microalbuminuria to macroalbuminuria and accelerates progression from early 
estages of diabetic nephropathy to ESRD. In this study 

significant association between smoking and progression of diabetic nephropathy was seen(p-value 0.000), this is 
agreed with other studies that showed smoking can 
change the structure and function of glomerular 
basement membrane and increase albuminuria. Smoking effect on the basement 
membrane and increase albuminuria resulting in progression of diabetic nephropathy, Lower progression to diabetic nephropathy or improvement of the ACR 
observed in prospective studies of diabetic subjects which 
exhibited microalbuminuria. No significant 
association between mean age of each group and albumin creatinine ratio (p-value .459).

CONCLUSION
From literature and result of the study we conclude that 
there was a significant association between smoking 
tobacco and prevalence of diabetic nephropathy. So, we 
recommend patients to change their habit and stop 
smoking to decrease its effect and slow progression of 
diabetic nephropathy. This study has some limitations, 
first female was not included in the study because of the 
d difficulty in sampling so we can’t generalize the result 
to entire diabetic population. Also dose of cigarettes and 
duration of smoking were not included in the study, 
So we recommend to include these factors in other 
studies.

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REFERENCES


19. Sara elfatih |Department OF Chemical Pathology, Faculty of Medical Laboratory Sciences, Al Khartoum University –Sudan| Email: saraelfatih89@hotmail.com.