

Periodontitis and Blood Glucose Level in Obese and Non Obese Type-2 Diabetic Patients

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ABSTRACT

Aim: To determine periodontitis in obese and Non-obese subjects of DM type 2.

Methods: 280 subjects were included from January, 2006 to June 2007. These were divided into groups I to VI with 40 controls. Both sexes were included with age ranges 31 to 70 years. Blood samples for fasting and random glucose were taken. Periodontal pocket depth was recorded in these patients.

Results: Significant difference was observed in blood sugar level. Fasting and random sugar shows significant difference in control subjects as well as diabetic patients with periodontitis periodontal depth was highly significant in DM as compared to control group. Periodontal pocket depth was more significant in obese diabetic when comparing with non-obese patients.

Conclusion: Periodontal pocket depth was significant in obese diabetic when comparing with non-obese.

Keywords: Obese, Non-obese, Periodontitis, type 2 diabetes mellitus

INTRODUCTION

In USA, approximately 15.7 million individuals (5.9%) have diabetes. Pakistan is sixth in the top ten countries i.e. higher percentage of diabetic patients in its population¹. The severity of periodontitis prevalence is mostly seen in diabetic patients. Periodontal disease is one of the sixth complication of diabetes mellitus². American Diabetes Association (ADA) has documented the history of recent or past dental infections as part of the medical specialist examination³.

METHODOLOGY

Study place was Pathology department Gomal Medical College, DI Khan. 280 patients were included in the study with groups I to VI with ages of 31-70 years. BSF >125mg/dl and BSR >200mg/dl with both sexes were included in the study. To see the depth of pocket, a probe was used. The data was analyzed by SPSS version.

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RESULTS

The detail of results is given in tables 1, 2 and 3.

Table 1: Blood Glucose and Periodontal Pockets Depth In Diabetic Obese Patients and Controls

Subjects	BSF(mg/dl)	BSR (mg/dl)	periodontal pockets Depth (mm)
Controls	85.2±0.8	136.9±2.3	0.00
Group I	168.1±0.6	249.3±1.1	5.15*
Group II	144.5*±1.6	238.0*±0.97	0.000
Group III	90.5±0.95	250.3±1.98	4.01**

*I vs III =P<0.05,** I vs III With control = P<0.05

Group I= obese diabetics with periodontitis,

Group II =obese

Diabetics without periodontitis, Group III =obese non diabetics with periodontitis

Table 2: Blood Glucose and Periodontal Pockets Depth In Diabetic Non-obese Patients and Controls

Subjects	BSF (mg/dl)	BSR (mg/dl)	Periodontal pockets depth(mm)
Controls	85.2±0.83	136.9±2.3	0.00
Group IV	171.1±15.5	294.7±18.2	4.86*
Group V	142.2*±12.3	274.5*±22.2	0.000
Group VI	89.5±1.8	133.1±1.6	3.98**

*Group IV vs VI = P<0.05,

**Group IV, VI vs Control = P<0.01

Group IV = Non obese diabetics with periodontitis,

Group V = Non obese Diabetics without periodontitis,

Group VI = Non obese non diabetics with periodontitis

Table 3: Blood Glucose Levels and periodontal pockets depth

Variables	Group		Values
Blood glucose fasting (BSF)	Control		85.2±0.83
	Obese	I	168.1*±0.6
		II	144.5±1.56
		III	90.5±0.95
	Non obese	IV	171.1*±15.5
		V	142.2±12.3
VI		89.5±1.7	
Random Blood glucose (BSR)	Control		136.9±2.3
	Obese	I	249.3*±1.1
		II	238*±0.96
		III	250.3±1.98
	Non obese	IV	136.9*±2.28
		V	274.5*±22.15
VI		133.1±1.56	
periodontal pocket depth	Control		0.00
	Obese	I	5.15*±0.12
		II	0.00
		III	4.01**±0.6
	Non obese	IV	4.86**±0.04
		V	0.00
VI		3.98**±0.0	

**P<0.05= Group I vs III., *P<0.01= Group I,III With control

DISCUSSION

In this study, diabetics had more fasting and random sugar when compared with controls and difference was significant statistically. One study revealed that diabetes mellitus is mainly involved in microvascular diseases and delayed wound healing². In diabetics, a compromised immune system is cause of increased the risk of diabetics to cause infection⁴.

One study observed the obesity induced inflammation in adipose tissues⁵. Diabetic patients with hyperglycemia are more prone to infection due to decrease immunity and causes periodontitis. In obese diabetics with periodontal pocket, there is increased glucose level when comparing with non-diabetic non-obese subjects having periodontal abscess and difference was significant statistically. Periodontal pocket depth was more with no significant difference.

In diabetes mellitus, due to decreased salivary blood flow, increases blood glucose level thus providing favorable substrates for bacteria to grow

causing periodontitis⁶. As obesity is main risk factor for development of diabetes mellitus, increased insulin resistance thus increases glucose causing periodontitis⁷. A possible connection between obesity and periodontitis has also been revealed⁸. While it has been established that diabetes mellitus is the factor for the growth and periodontitis. It has been revealed that obesity is an aggravating factor for diabetes. Adipose tissues releases proinflammatory agents which can cause the periodontitis to plaque biofilm⁹.

CONCLUSION

Adipose tissue severely affects glucose level and also stimulate inflammatory changes in the form of periodontitis.

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