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The Influence of Diabetes on Peripheral Arterial Disease comorbidities in the Central Appalachian Region between 2008 and 2018.

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Background

Over 100 million people in the United States (U.S.) have diagnosed diabetes or pre-diabetes. People with this condition are at an increased risk of Peripheral Arterial Disease (PAD).

There is a high prevalence of people with risk factors of diabetes especially in the rural Central Appalachia region. People with diabetes are at a higher risk of developing atherosclerosis, which is the most common cause of PAD.

Although about 20–30% of 12 million people affected with PAD in the U.S. have diabetes, little is known about diabetes in PAD patients in Central Appalachia.

Purpose

Therefore, this study aimed to examine the risk factors of diabetes in patients with PAD within the Central Appalachian region.

Methods

Study population:

-13,455 index cases were extracted from the Electronic Medical Records (EMR) using the ICD-9 and ICD-10 codes.

- 6153 cases were diabetics with 3472 males and 2681 females.

Outcome:

The outcome variable under study was the prevalence of diabetes in the study population

Risk factors and predictors:

Myocardial Infarction (MI) history, hypertension, smoking status and hypercholesterolemia.

Socio-demographic variables considered in the study included gender, age, ethnicity and marital status

Covariates were Body Mass Index (BMI), Low density lipoproteins (LDL), High density lipoproteins (HDL), Total Cholesterol, and Triglycerides (TG).

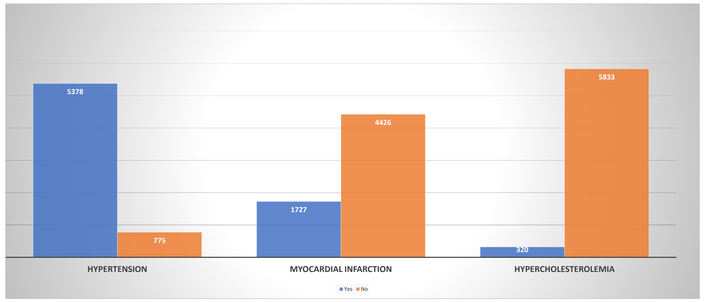
Statistical Analysis:

-Multivariable logistic regression was performed to examine potential risk factors of diabetes in PAD patients.

-Independent T-tests were used to compare the means among diabetics and non-diabetics.

Results

Figure 1: Bar chart showing Diabetes in PAD and its prevalence in some comorbidities



* p-value < 0.05.

Table 1: Statistical differences between Diabetes in PAD and Non-Diabetes PAD individuals and their association with some covariates. Independent T-test

Characteristic		Sig. (2-tailed)	95% Confidence Interval of the Difference	
			lower	Upper
Age	Equal variances not assumed	0.159	-0.110	0.672
BMI	Equal variances not assumed	0.025	-13.013	-0.850
LDL Result	Equal variances not assumed	0.000	11.002	14.741
HDL Result	Equal variances not assumed	0.000	4.782	6.665
CHL Result	Equal variances Assumed	0.000	8.529	13.761
Triglycerides	Equal variances not assumed	0.000	-64.917	-46.297
MI History	Equal variances not assumed	0.000	-0.114	-0.086
Hypertension	Equal variances not assumed	0.000	-0.166	-0.140
Hypercholest-erolemia	Equal variances not assumed	0.000	-0.021	-0.007
Smoking Status	Equal variances not assumed	0.000	0.109	0.148

Table 2: Statistical Analysis of Diabetes outcome of PAD patients in the presence of multiple predictors.

Characteristic	B	S.E.	Sig.	OR	95% CI for Exp(B)	
					lower	upper
Age	0.002	0.005	0.768	1.002	0.991	1.012
Last BMI	0.055	0.008	**0.000**	1.056	1.039	1.073
LDL Result	-0.009	0.007	0.207	0.991	0.976	1.005
HDL Result	-0.020	0.008	**0.009**	0.980	0.965	0.995
CHL Result	-0.001	0.007	0.876	0.999	0.985	1.013
Triglycerides	0.003	0.001	**0.017**	1.003	1.001	1.005
MI History	0.319	0.109	**0.003**	1.375	1.111	1.703
Hypertension Registry	1.038	0.228	**0.000**	2.822	1.804	4.415
Hypercholesterolemia	0.087	0.135	0.521	1.091	0.837	1.421
Smoking Status	-0.221	0.114	**0.053**	0.802	0.641	1.003

a. The reference category is diabetics in PAD Exp(B) = Odds Ratio CI = Confidence Interval, * Sig./ p-value < 0.05.

Discussion & Conclusions

CVD risk factors are strongly associated with PAD comorbidities, which are worsened in the presence of diabetes.

HDL seemed to be negatively associated with female diabetics while smoking seemed to be negatively associated in male diabetics.

Among study participants, the distribution of Diabetes in known PAD patients when gender was held constant was not significant with age, marital status, ethnicity, LDL and hypercholesterolemia

Diabetes was found very significant in PAD occurrence in the setting of hypertension.

We suggest that hospitals and health care systems should strongly control for the risk factors of diabetes and adopt a multi-risk-factor approach for improving health outcomes for PAD patients.

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