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## BACKGROUND

According to CDC there are 88.0 million Americans aged 18 years or older with prediabetes. Cardiovascular disease is the primary cause of morbidity and mortality in diabetes.

The relationship between prediabetes and coronary atherosclerosis is not well established. This study evaluated the association between prediabetes and coronary atherosclerosis and compared it to non-diabetic population.

## METHODS

In this retrospective study all patients who underwent CCTA and coronary artery calcium (CAC) testing at our outpatient imaging center for the past 5 years were screened.

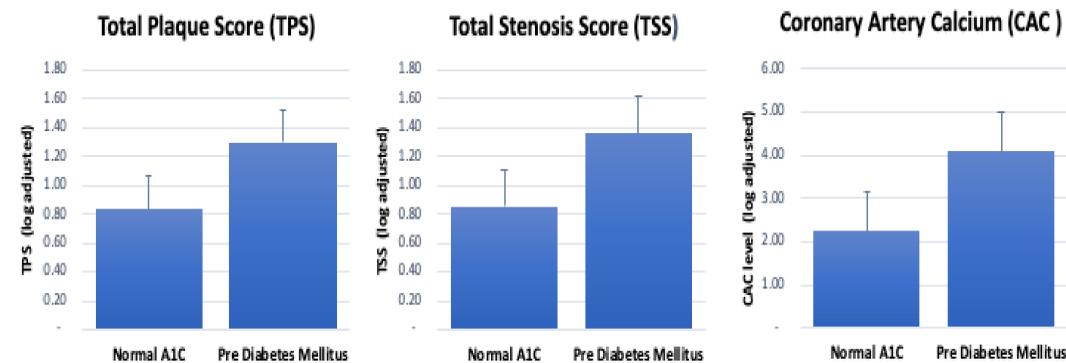
253 patients had recorded HbA1c values and were included in the study. 256 slice multi detector CT (GE Revolution, Milwaukee WI) scanner was used for imaging. CAC was scored using non-contrast CT. Total plaque score (TPS) and total stenosis score (TSS) were quantified using coronary CTA. Each of the scores were compared between prediabetic (125) and non-diabetic groups (128).

## RESULTS

The mean age of the study cohort was  $53.2 \pm 17.1$  years, 66% were males, 114 had hyperlipidemia (45%), 108 had hypertension (43%), 96 were present smokers (38%) and the mean HbA1c was  $5.6 \pm 0.4$ .

## FIGURE 1

Illustration of Mean Scores of TPS, TSS and CAC Between Prediabetes and Non-diabetic Groups.



Subjective quantification of plaque and stenosis by CCTA  
 TPS: no plaque=0, minimal=1, mild=2, moderate=3, severe=4.  
 TSS: no stenosis=0, <30%=1, 30-49%=2, 50-69%=3, 70-99%=4, 100%=5.

## FIGURE 2

CCTA Illustration of stenosis and plaque burden



Figure A: Moderate stenosis.

Figure B: Diffuse atherosclerosis

In multivariate adjusted regression models, the odds of TPS (OR:2.93; CI: 1.54,5.57)  $P < 0.001$ , TSS (OR:2.82; CI:1.48,5.38)  $P < 0.002$  and CAC score (OR:3.43; CI: 1.74,6.74)  $p < 0.001$ , were all higher in prediabetic patients.

## CONCLUSION

Our findings suggest that prediabetics have higher atherosclerotic plaque burden compared to non-diabetics. These findings place prediabetics at higher risk category to have cardiovascular events compared to nondiabetics.

## DISCUSSION

Higher atherosclerotic plaque burden contributes to cardiovascular events. Implementation of early screening using CAC and CCTA can help identify prediabetics with higher atherogenic potential. Additionally, identification of subclinical atherosclerosis and estimation of the plaque burden will help guide pharmacological treatment strategies for atherosclerosis in patients with prediabetes. Early medical therapy in prediabetics may reduced future cardiovascular events. Further large-scale studies are required to evaluate the outcomes of cardiovascular events in the prediabetic population.

## REFERENCE

Cai X, Zhang Y, Li M, Wu J H, Mai L, Li J et al. Association between prediabetes and risk of all cause mortality and cardiovascular disease: updated meta-analysis *BMJ* 2020; 370 :m2297 doi:10.1136/bmj.m2297