Smoking Predicts Albuminuria in Prediabetes and Diabetes

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February 24, 2022

The study covered in this summary was published on SSRN's Preprints With The Lancet as a preprint and has not yet been peer reviewed.

Key Takeaways

- People who smoke and have either prediabetes or diabetes had a higher incidence of albuminuria compared with nonsmokers with prediabetes or diabetes.
- People who smoke with prediabetes are at a significantly higher risk for albuminuria compared with people who smoke and have diabetes.
- People younger than age 50 who had prediabetes or diabetes had a higher risk for albuminuria compared with those who were age 50 or older and had prediabetes or diabetes.
- The risk for albuminuria was high in people with prediabetes or diabetes despite their use of antihypertensive and lipid-lowering medications.
- Former smokers with either disease state did not have a lower risk for albuminuria.

Why This Matters

- Albuminuria is an independent predictor for microvascular and macrovascular complications, and hence screening people with prediabetes for albuminuria may help to identify those with the highest risk and prioritize them for preventive interventions.
- Keeping the A1c level below the diabetes range in people who smoke and have prediabetes may not prevent a surge of vascular complications in people with prediabetes. Current management of cardiorenal risk factors in people with prediabetes may be inadequate. Interventions focused on keeping A1c in the prediabetes range may not reduce the risk of albuminuria and other vascular complications and may result in late presentation with established microvascular and macrovascular complications that are no longer amenable to reversal.
- Diabetes management may need to focus more on additional ways to prevent vascular damage beyond cholesterol and blood pressure management, in addition to glycemic control.
- Smokers with prediabetes and diabetes should be encouraged/supported not only to quit smoking, but also to remain abstinent. Smokers may need to remain abstinent for a prolonged time to reduce their vascular risk to the level of nonsmokers. In the short-term, smoking cessation may not reduce the risk of albuminuria.

Study Design

- This cross-sectional study involved 502,490 participants from the UK Biobank with data collected from 2006-2010. They completed a lifestyle questionnaire that asked about their sociodemographic data and whether they had been diagnosed with diabetes or were taking insulin or medication for blood pressure or high cholesterol. Researchers analyzed blood and urine samples from these participants.
- The study's primary outcome was urinary albumin concentration.
- Researchers used logistic regression analysis of the dataset and performed subgroup analyses to investigate the effects of age, smoking status, and antihypertensive and lipid-lowering medications on levels of albuminuria in people with prediabetes, diabetes, or normal glycemic control.

Key Results

- Study participants averaged age 57. Their prevalence of prediabetes was 4.3%, and their diabetes prevalence was 3.9%. The prevalence of albuminuria among those with prediabetes was 32%, and 45% among those with diabetes. Smoking prevalence was 15% in those with prediabetes, and 12% in those with diabetes.
- Among people with prediabetes the adjusted odds ratio of albuminuria was a significant 21% higher in current smokers compared with those who never smoked, after adjusting for cardiorenal risk factors such as age, sex, hypertension, A1c, cholesterol, ischemic heart disease, stroke, deprivation, and body mass index.
- Among those with diabetes the adjusted odds ratio of albuminuria was a significant 26% higher in current smokers compared with those who never smoked.
- Younger age enhanced the risk for albuminuria associated with smoking. Among those younger than 50 years with prediabetes, the odds ratio for albuminuria among smokers was a significant 43% higher compared with nonsmokers. People with diabetes in the same age range who smoked had a significant 29% higher rate of albuminuria compared with those who did not smoke.

Limitations

- By using data from the UK Biobank, the study took on the limitations inherent in this database. This included the Biobank's exclusive enrollment of people age 40-69 years, and several aspects that make it unrepresentative of the general UK adult population: its disproportionately high enrollment of White individuals, older people, and women; its disproportionately low enrollment of socioeconomically deprived people; a relatively low prevalence of smoking and of obesity; a relatively low level of alcohol consumption; and a relatively low level of self-reported physical or mental health conditions.
- The cross-sectional design of the study identifies associations but cannot determine causal relationships.

Study Disclosures

- The study received no commercial funding.
- Several co-authors have served as consultants or advisors to or have received research funding from numerous drug companies. Several other co-authors had no disclosures.

This is a summary of a preprint research study , "Predictors and Determinants of Albuminuria in People with Prediabetes and Diabetes Based on Smoking Status: A Cross-Sectional Study Using the UK Biobank Data," written by authors from a variety of centers primarily in the UK on SSRN's Preprints With The Lancet, provided to you by Medscape. This study has not yet been peer reviewed. The full text of the study can be found on papers.SSRN.com.

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Cite this: Smoking Predicts Albuminuria in Prediabetes and Diabetes - *Medscape* - Feb 24, 2022.