SMOKING CESSATION AND THE RISKS OF DIABETES MELLITUS AND IMPAIRED FASTING GLUCOSE: THREE YEAR OUTCOMES FROM A RANDOMIZED CLINICAL TRIAL

Poster Contributions
Poster Sessions, Expo North
Sunday, March 10, 2013, 9:45 a.m.-10:30 a.m.

Session Title: Prevention: Diabetes and Risk
Abstract Category: 24. Prevention: Clinical
Presentation Number: 1185-5

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Background: Smoking cessation reduces cardiovascular disease risk but leads to weight gain, which may increase risk for diabetes mellitus (DM) and impaired fasting glucose (IFG). Since contemporary smokers are older and more overweight than in historical cohorts, we investigated relationships between smoking cessation and incident DM and IFG 3 years after a quit attempt.

Method: Fasting plasma glucose (FPG) and HgbA1C levels were measured in active smokers enrolled in a prospective, randomized clinical trial of 5 smoking cessation pharmacotherapies. DM was defined as use of antihyperglycemic medication, FPG ≥126 mg/dL, and/or HgbA1C ≥6.5%. IFG was defined as FPG ≥100 mg/dL without DM. SAS PROC GLM was used to develop mixed-effects regression models; interaction terms were evaluated to determine if the incidences of DM and IFG differed between abstainers and continuing smokers after 3 years.

Results: The 1016 subjects (58% female, 82% white) were mean (standard deviation) 45.6 (10.9) years old, smoked 21.2 (9.2) cigarettes/day, and had a smoking history of 29.7 (20.5) pack-years; their body-mass index (BMI) was 29.1 (6.5) kg/m2. After 3 years, 42.9% were abstinent. Abstinent subjects gained more weight (+6.5 vs. 1.7 kg, p<0.001) and had a greater increase in FPG (+4.5 vs. 0.7 mg/dL, p<0.001) than continuing smokers. IFG prevalence increased from 21.4% to 40.1% in abstinent subjects, but only increased from 20.7% to 22.7% in continuing smokers (p<0.001). DM prevalence increased from 3.1% to 11.4% in abstinent subjects, but only increased from 7.2% to 10.5% in continuing smokers (p=0.020). In addition to abstinence at year 3 (p=0.016), baseline independent predictors of incident DM were older age (p<0.001), BMI (p=0.001), and non-white race (p=0.004), but not cigarettes/day or pack-years (model AUC = 0.73). Weight change was strongly associated with year 3 FPG (p<0.001).

Conclusions: In a large cohort of contemporary smokers, abstainers gained more weight and had a much higher risk of developing IFG and DM. Preventing weight gain may help maximize the cardiovascular benefits of smoking cessation.