THE INVOLVEMENT OF DIETARY FACTORS IN EARLY RENAL DISEASE IN INSULIN DEPENDENT DIABETES MELLITUS

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Microalbuminuria is a strong predictor of renal disease and mortality in insulin dependent diabetes mellitus (IDDM). About one-third of people with IDDM eventually develop renal disease. In some countries, a reduced protein intake is recommended for people with IDDM to avoid developing renal disease. The scientific evidence for this recommendation is scanty. A cross-sectional study of Tasmanian adults with IDDM was carried out to determine the relationship of usual dietary macronutrient intake with microalbuminuria. The dietary exposures were measured using a Food Frequency Questionnaire (FFQ), and the 178 subjects had not previously been diagnosed with microalbuminuria. Albuminuria category was determined using the average urinary albumin excretion rate in three timed overnight urine collections, with 20 μg/min as the critical value.

Logistic regression techniques were used with albuminuria category as a dichotomous outcome and controlling for sex, age at diabetes diagnosis, age, smoking status, duration of diabetes, body mass index, glycosylated haemoglobin, serum HDL cholesterol, frequency of exercise and daily number of insulin injections. The adjusted odds ratio for microalbuminuria for the highest quintile of energy-adjusted usual saturated fat intake compared to the other four quintiles was 3.8 (95% CI 1.3-11.2). The adjusted odds ratio for microalbuminuria for the highest quintile of energy-adjusted usual protein intake caompared to the other four quintiles was 0.10 (95% CI 0.02-0.58). There was no significant association between microalbuminuria and energy adjusted carbohydrate intake, energy adjusted monounsaturated fat intake, energy adjusted polyunsaturated fat intake or energy adjusted dietary cholesterol intake.

The relationship between dietary protein intake and microalbuminuria and dietary saturated fat and microalbuminuria were strengthened by the inclusion of both nutrients as independent variables in logistic regression models. When the energy adjusted nutrient quintiles for both nutrients were included in the regression, the positive relationship between energy-adjusted saturated fat intake and previously unidentified microalbuminuria was strengthened by adjusting for serum HDL cholesterol. Adjustment independently for gender, glycosylated haemoglobin, age at diabetes diagnosis, duration of diabetes, smoking status, age, exercise frequency and body mass index had no substantial effect. The negative association between energy-adjusted protein intake and previously unidentified microalbuminuria was strengthened by controlling for age at diagnosis, and age, however gender, glycosylated haemoglobin, serum HDL cholesterol, body mass index, duration of diabetes, smoking status and exercise frequency individually had no substantial effect.

Conclusion: This study suggests a relationship between diet and the development of microalbuminuria which should be confirmed using a prospective study design. People with IDDM and normoalbuminuria should not be advocated a low protein intake until evidence is available for its efficacy in delaying or preventing the onset of microalbuminuria.

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