

UKPDS 10: Urinary albumin excretion over 3 years in diet-treated Type 2, (non-insulin dependent) diabetic patients, and association with hypertension, hyperglycaemia and hypertriglyceridaemia

CA Cull, S Manley, V Frighi, RR Holman, R Turner for the UKPDS Group

Diabetologia (1993) 36: 1021 - 1029

Summary

Urinary albumin excretion has been assessed in 585 newly-presenting Type 2 (non-insulin-dependent) diabetic patients (aged 53 (8) years, 67% male) at diagnosis with fasting plasma glucose 10.3 (3.2) mmol/l and over 3 years of dietary treatment. Urinary albumin at diagnosis, geometric mean (1 SD interval) corrected for dilution by regression on urine creatinine concentration of 10 mmol/l, was 17 (5-58) mg/l compared with 8 (3-18) mg/l in an age-matched non-diabetic reference population. Values greater than 50 mg/l were found in 17% of diabetic patients compared with 4% in the reference group. After diet therapy for 3 months, fasting plasma glucose decreased to 6.9 mmol/l and urinary albumin to 12 (4-31) mg/l ($p < 0.0001$). This suggests that increased urinary albumin excretion at diagnosis is in part functional, possibly secondary to glomerular hyperfiltration caused by hyperglycaemia and raised blood pressure. Over the next 3 years, mean fasting plasma glucose was 7.2 mmol/l, albumin excretion changed little, without significant increase either in patients with raised or normal albumin at diagnosis. Both at diagnosis and over 3 years, urinary albumin excretion was independently associated with fasting plasma glucose and triglyceride levels and with systolic blood pressure, but the combination of these factors only explained 10% of the total variance. This suggests the presence of additional pathological processes in patients with increased urinary albumin. Urinary albumin was not associated with other variables included in syndrome X, such as HDL cholesterol, fasting plasma insulin, obesity or central adiposity. The lack of change in urinary albumin over 3 years, even in subjects with raised excretion and in the highest group for glycaemia. Indicates that the pathological processes are only slowly progressive in these asymptomatic patients. Increased cardiovascular mortality associated with raised urinary albumin excretion may in part be secondary to the associated hypertension and elevated triglyceride levels.

Key words

Type 2 (non-insulin-dependent) diabetes mellitus, albumin excretion, hypertension, triglyceride, UK Prospective Diabetes Study