Nephropathy

Better control of microalbuminuria needed in young patients

Colin Close, Consultant Physician, Taunton and Somerset Hospital

The latest data from the Oxford regional prospective study (summarised alongside) describe the cumulative risk of developing micro- or macroalbuminuria in childhood type 1 diabetes; the close association of this risk and diabetes control is also emphasized. Risk of development of microalbuminuria rises progressively with each quartile of mean HbA_{1c}. Although the study did not identify a threshold below which microalbuminuria would not occur, there was a more than four-fold higher cumulative prevalence of microalbuminuria (approaching 50%) in those with a mean HbA_{1c}>12%, compared with HbA_{1c}<8.5%. Lifetime mean HbA_{1c} concentrations were higher at 11% in those who developed microalbuminuria compared to 9.5% in those who did not.

Although there was a striking cumulative prevalence of microalbuminuria (50%) after 19 years mean duration of diabetes, regression was seen in 39% and was associated with lower subsequent concentrations of HbA_{1c}. Progression to macroalbuminuria (proteinuria) correlated strongly with the development of persistent microalbuminuria and development of higher blood pressure, with readings of 127/86mmHg versus 118/79mmHg. In 2004, the Steno clinic reported a 34% cumulative incidence of microalbuminuria in adult-onset type 1 diabetes over a mean of 18 years (Hovind et al, 2004), although subsequent regression and intermittent microalbuminuria were also observed. Poor glycaemic control, both initial and recent, correlated with the development of microalbuminuria. The 2005–2006 National Diabetes Audit for children and young people in England and Wales also reported an HbA_{1c}>9.5% in 29% of patients under 16 years of age and in 37% of the group aged 16–24 years (Information Centre, 2007).

The data from the Oxford study highlight blood glucose control and microalbuminuria as the only two modifiable risk factors for nephropathy in type 1 diabetes, emphasizing the need for improved blood glucose control in childhood and adolescence. Further clarification is needed to determine when intervention with blockade of the renin–angiotensin–aldosterone system in adolescent patients should take place. These clarifications are necessary if clinicians are to reduce the continuing burden of nephropathy in adults with type 1 diabetes.

Hovind P, Tarnow L, Rossing P et al (2004) Predictors for the development of microalbuminuria and macroalbuminuria in patients with type 1 diabetes: inception cohort study. *BMJ* **328**: 1105

Information Centre, The (2007) *National Diabetes Audit Executive Summary: Key findings about the quality of care for people with diabetes in England and Wales – Report for the audit period 2005-2006*. The Information Centre, London

BMJ

Microalbuminuria progression in childhood-onset type 1 diabetes

Readability	✓✓✓✓
Applicability to practice	✓✓
WOW! factor	✓✓✓✓

1 Development of microalbuminuria in people with type 1 diabetes is a known marker of future structural renal disease.

2 This study presents the latest data from the Oxford prospective population cohort of patients, a study striving to define the overall development of microalbuminuria in people with childhood-onset type 1 diabetes.

3 This branch of the Oxford study aimed to identify the individual markers of microalbuminuria development and progression to macroalbuminuria.

4 A total of 527 patients were followed for a mean of 9.8 years, including a total of 5182 patient years of follow-up; patient data analyses included annual measurements of glycated haemoglobin levels (HbA_{1c}) and urinary albumin:creatinine ratios.

5 After 10 years of diabetes, 25.7% of patients developed microalbuminuria, increasing to 50.7% after 19 years; microalbuminuria progressed to macroalbuminuria in 13.9% of cases, at the mean age of 18.5 years.

6 High HbA_{1c} concentrations were the only modifiable adjusted predictor for microalbuminuria; poor control of microalbuminuria combined with poor glucose control were identified as modifiable adjusted predictors for development of microalbuminuria to macroalbuminuria.

Amin R, Widmer B, Prevost AT et al (2008) Risk of microalbuminura and progression to macroalbuminuria in a cohort with childhood onset type 1 diabetes: prospective observational study. *BMJ* **336**: 697–701

DIABETES CARE

Rosiglitazone can reduce incidence of diabetes and renal disease

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 This study aimed to compare the treatment effect of ramipril with that of rosiglitazone on the occurrence of cardiovascular and renal disease in patients with impaired glucose tolerance (IGT), impaired fasting glucose (IFG) or both.

2 A total of 5269 people were included in this study; participants were over 30 years of age, wtih no known cardiovascular disease or renal insufficiency.

3 Participants were randomly assigned to receive either treatment with 15mg/day ramipril or 8mg/day rosiglitazone; both treatment groups were compared with placebo controls.

4 Neither treatment was shown to reduce the risk of cardio–renal composite outcomes compared with placebo (P=0.75 and P=0.07 for ramipril and rosiglitazone, respectively).

5 Treatment with ramipril did not have any effect on either cardiovascular or renal outcomes.

6 Interestingly, treatment with rosiglitazone was shown to increase heart failure (P=0.001), but risk of renal disease was reduced (P=0.005) and, by independent association, prevention of diabetes was increased (P<0.001).

The DREAM Trial Investigators (2008) Effects of ramipril and rosiglitazone on cardiovascular and renal outcomes in people with impaired glucose tolerance or impaired fasting glucose. Results of the Diabetes REduction Assessment with ramipril and rosiglitazone Medication (DREAM) trial. *Diabetes Care* **31**: 1007–14

DIABETIC MEDICINE

Anaemia in patients with stage 3 CKD

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 Anaemia occurs in patients with early stages of diabetes-related chronic kidney disease (CKD), however the overall prevalence of anaemia is not known.

2 Haemoglobin (Hb) measurements from glycated haemoglobin samples and recent estimated glomerular filtration rates were analyzed in this study, in order to diagnose anaemia (Hb<110 g/l).

3 Anaemia was observed in 12% of participants; prevalence of anaemia was observed to increase with CKD progression.

4 In particular, anaemia was most prevalent in people who had stage 3 CKD (18%); these observations demonstrate the need for anaemia screening in patients with diabetes.

New JP, Aung T, Baker PG et al (2008) The high prevalence of unrecognized anaemia in patients with diabetes and chronic kidney disease: a population-based study. *Diabetic Medicine* **25**: 564–69

CLINICAL NEPHROLOGY

Fewer foot complications in patients on peritoneal dialysis

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 Although it is known that patients with diabetes in the latter stages of renal disease are more likely to develop foot complications, the effect of treatment with peritoneal dialysis on this risk is not known; this study aimed to determine the association between peritoneal dialysis and peripheral vascular disease in these patients.

2 Data from a total of 71 patients receiving peritoneal dialysis were retrospectively analysed; of these patients, 33 demonstrated foot complications.

3 Overall, patients receiving treatment with peritoneal dialysis demonstrated a lower rate of foot complications and amputation; the authors attribute this observation to the early intervention by a chiropodist, illustrating the importance of foot monitoring in routine clinical practice.

Pliakogiannis S, Bailey S, Cherukuri S et al (2008) Vascular complications of the lower extremities in diabetic patients on peritoneal dialysis. *Clinical Nephrology* **69**: 361–67

JOURNAL OF INVESTIGATIVE MEDICINE

Additional therapy with spironolactone improves proteinuria

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 Treatment with either angiotensin-converting enzyme inhibitor (ACEi) or antiotensin receptor blocker (ARB) is recommended for patients with diabetes-related nephropathy; this study investigated the effect of additional therapy with spironolactone, an aldosterone receptor blocker.

2 Compared with placebo, additional treatment with spironolactone resulted in lower systolic blood pressure (P=0.01).

3 Levels of proteinuria were also reduced with spironolactone (P=0.004), but increased in the placebo group (P=0.35).

Saklayen MG, Gyebi LK, Tasosa J et al (2008) Effects of additive therapy with spironolactone on proteinuria in diabetic patients already on ACE inhibitor or ARB therapy: results of a randomized, placebo-controlled, double-blind. *Journal of Investigative Medicine* **56**: 714–19

'Treatment with rosiglitazone was shown to increase heart failure, but risk of renal disease was reduced.'