Impact of rurality and social deprivation upon the incidence and diagnosis of native renal biopsy

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Aim: The influence of relative deprivation and rurality on the incidence of renal diseases is not known. The aim of this study was to assess whether deprivation and rurality are associated with the incidence of native renal biopsy and diagnosis.

Methods: All adult native renal biopsies performed in the Glasgow Renal Units from 2000-2010 were included. These units cover a population of 1.5 million people (Greater Glasgow and Clyde (GG&C) and Forth Valley (FV) Health Boards). The patient's postcode, Scottish rurality code and Scottish Index of Multiple Deprivation (SIMD 2009) rank were recorded. Healthboard specific quintiles of deprivation were created and allocated to patients according to their SIMD rank. Prospective biopsy indication, baseline demographics and diagnoses were recorded. Data were calculated per million population served.

Results: 1818 native biopsies were performed. 263 patients were excluded (75 had no CHI or no postcode available, 188 had a postcode out with GG&C or FVHB) leaving 1555 eligible patients. 58.5% of patients were male, mean age 56.3 (SD 17.1) years, mean eGFR 41.4 (SD 32.2) ml/min/1.73m^2 and median uPCR 234mg/mmol (IQR 90-578).

Fewer biopsies were performed in patients from rural areas (78.7 PMP/yr vs. 97.7 PMP/yr). Patients from rural areas were less likely to have a biopsy diagnosis of glomerulonephritis (35.3 PMP/yr vs. 43.8 PMP/yr) or interstitial nephritis (1.7 PMP/yr vs. 6.8 PMP/yr). There was no difference in the relative frequency of biopsy diagnosed ANCA-associated vasculitis between urban and rural areas (rural 13.3 PMP/yr vs. 12.3 PMP/yr).

Patients who live in the top 20% most deprived areas within GG&C and FVHB were more likely to undergo native biopsy (109.5 PMP/yr compared with 95.9 PMP/yr in the 20% most affluent areas). Patients who live in the 20% most deprived areas were more likely to be found to have a primary glomerulonephritis, particularly IgA nephropathy (20.0 biopsies PMP/yr vs. 9.1 PMP/yr) at biopsy. Correspondingly, indications for biopsy in these patients were more likely to be nephrotic syndrome or significant proteinuria and they had significantly higher baseline proteinuria excretion (Kruskall-Wallis p=0.02).

Conclusions: Patients from rural areas are less likely to undergo native renal biopsy. There is no evidence that patients from deprived areas are restricted in their access to renal biopsy. Patients who live in the 20% most deprived areas are more likely to be found to have a primary glomerulonephritis (particularly IgA nephropathy) at renal biopsy.