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Levels of socioeconomic deprivation are associated with worse kidney outcomes in patients with IgA nephropathy: data from UK RaDaR

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1. Introduction

IgA nephropathy (IgAN) is the most prevalent primary glomerulonephritis worldwide and remains a leading global cause of chronic kidney disease and kidney failure. The natural history of IgAN varies considerably across populations as does the risk of development of kidney failure. Given the well established gradient between greater socioeconomic deprivation and worse health, in this study we aimed to determine whether socioeconomic deprivation influenced the risk of developing kidney failure due to IgAN in the UK.

2. Methods

The National Registry of Rare Kidney Diseases (RaDaR) is a UK Kidney Association (UKKA) initiative that collects retrospective and prospective data from patients with rare kidney diseases in the UK. The IgAN Rare Disease Group (RaDaR-IgAN) includes patients with biopsy-proven primary IgAN and an estimated glomerular filtration rate (eGFR) <60 mL/min/1.73m2 or proteinuria ≥0.5g/24h (or equivalent protein-to-creatinine ratio value) at any time in their natural history. Patients with IgA vasculitis are separately recruited into the Vasculitis Rare Disease Group. Recruitment began in 2013 to RaDaR-IgAN and is ongoing in 107 adult and paediatric kidney units across the UK.

To determine the impact of socioeconomic deprivation on rate of progression of IgAN in the RaDaR cohort deprivation quintiles were derived using patient postcodes matched to Index of Multiple Deprivation (IMD) scores. Kidney survival from diagnosis was analysed using Kaplan Meier methods and Cox regression. The event was initiation of kidney replacement therapy, censored for death.

3. Results

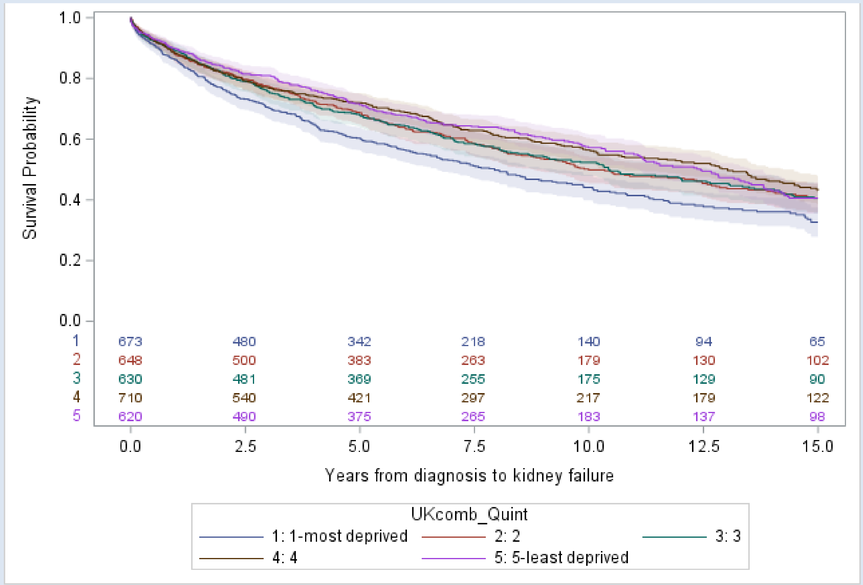
The characteristics of 4,127 IgAN patients in RaDaR by IMD quintiles are shown in the **Table**. The more deprived quintiles had significantly more non-white (p<0.0001) and female (p=0.03) patients. There was a clear association between the risk of development of kidney failure and deprivation quintile (**Figure**) with the most deprived IgAN patient group exhibiting significantly faster progression. HR for kidney failure after adjustment for age, eGFR at diagnosis and gender for IMD1 vs 3 quintile: 1.46 (1.15-1.84), p=0.0017. Repeating this analysis including only white patients resulted in an adjusted HR of 1.72 (1.31-2.27) p= 0.0001.

RaDaR, the UK Rare Renal Disease Registry (www.rarerenal.org), was established by the UK Kidney Association (https://ukkidney.org) in 2010 and now includes more than 26,000 patients at over 100 UK hospitals who have been diagnosed with one of 30 categories of rare kidney disease and who have provided written informed consent to participate. It is hosted by the UK Renal Registry (https://ukkidney.org/about-us/who-we-are/uk-renal-registry) and incorporates links to other national databases and, for the majority of participants, automated upload of biochemical and other hospital medical record data.

Patient characteristics by Index of Multiple Deprivation (IMD) score quintiles

IMD Quintiles	Age at diagnosis (median, 25th & 75th pctl)	Gender (M/F) (% IMD quintile)	White/ non-White (%)	eGFR at diagnosis (median, 25th & 75th pctl)	Time to kidney failure (median, 95% CI)
n	3663	4127	3733	1653	3281
1- most deprived	38.9 (28.4, 51.2)	67.3/32.7	75.2/25.8	38 (21, 69)	7.9 (6.9, 9.3)
2	39.3 (29.6, 50.2)	69.8/30.2	76.2/23.8	43 (25,70)	10.0 (8.8, 12.5)
3	41.0 (29.4, 51.9)	69.9/30.1	86.2/13.8	39 (22, 70)	10.4 (9.0, 12.6)
4	41.1 (29.5, 52.0)	71.2/28.8	89.6/10.4	41 (22, 68)	13.0 (10.7, 14.5)
5- least deprived	41.6 (30.6, 55.0)	74.3/25.7	88.5/11.5	37 (22, 68)	12.4 (11.1, 13.5)

Kaplan Meier plot showing time from diagnosis to kidney failure and numbers at risk, censoring for death, by Index of Multiple Deprivation (IMD) score quintiles



4. Conclusion

Outcomes in this large IgAN cohort have been published and shown to be poor with few patients expected to avoid kidney failure in their lifetime.

This analysis demonstrates even worse outcomes if more socioeconomically deprived. Non-white and female patients were overrepresented in the more deprived quintiles. Significant differences in kidney survival were seen between the most deprived quintile and the other quintiles after adjusting for age, gender and eGFR at diagnosis, and also when restricting to a white population.

These data highlight the need to develop strategies to ensure equity of access to specialized glomerular disease expertise and to the new therapies that are showing promise in preventing kidney failure in IgAN.

REFERENCES

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