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Evidence-Based Therapy May Improve Outcome in Glomerulonephritis—A Prospective Field Survey

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ABSTRACT

Introduction and aims: Although glomerulonephritis is rare in the general population it is the second most important cause for end-stage renal failure. The therapy of glomerulonephritis is guided by a limited number of individual clinical trials and treatment recommendations are based on meta-analysis and Cochrane Systematic Reviews. The impact of such therapy standards on the prognosis of glomerulonephritis is not known. Methods: Between October 2002 and December 2008 patients with abnormal urine findings and/or decreasing renal function of unknown cause were referred for renal biopsy. In a collaboration of out-patient nephrologists with a major teaching hospital, all patients received treatment recommendations according to evidence-based therapy guidelines based on Cochrane Systematic Reviews. Patient charts were systematically reviewed and patients were re-examined for follow-up until November 2009. Cox Regression analysis was performed to identify independent prognostic factors. Results: Two hundred patients with primary or secondary glomerulonephritis were identified. Complete follow-up data were available from 196 patients with 324 therapeutic interventions. The mean follow-up was 2.8 ± 2.0 years. Among all patients, 37% remained unchanged ill, 13% died, 17% had progressing renal disease, while 19% had a complete and 14% a partial remission. Proteinuria declined in primary glomerulonephritis (5.0 ± 5.4 g/d to 2.1 ± 3.4 g/d, $p < 0.001$) and secondary glomerulonephritis (4.8 ± 4.6 g/d to 2.7 ± 3.1 g/d, $p = 0.004$). The highest rates of remission were observed in minimal change disease (83%) and membranous nephropathy (50%). Survival was lowest in MPGN and secondary rapid-progressive glomerulonephritis (33% and 50%, respectively). 70 (22%) interventions were complicated by adverse events resulting in treatment cessation in 25 cases. Cox univariate analyses identified the following parameters to improve outcome: Histology, no tubulointerstitial fibrosis, primary glomerulopathy, absence of hypertension at presentation, diabetes, ischemic heart disease, no diuretics or insulin, serum creatinine < 175 µmol/l, blood pressure < 160 mmHg, age < 60 ys, prednisolone, cyclosporin A, azathioprine, and follow-up by 24 hr urine. In a multivariate forward Cox regression analysis, tubulo-interstitial fibrosis had a hazard for the combined end-point of death, dialysis and progression of renal failure of 4.4 (95% confidence interval (95% CI: 1.8 - 10.6) while intensive follow-up by regular 24 hr urine collections reduced the risk to 0.3 (95% CI: 0.1 - 0.7), treatment with prednisolone had a hazard of 0.3 (95% CI: 0.1 - 0.9), and cyclosporin A therapy a hazard of 0.2 (95% CI: 0.02 - 1.4). Application of Cochrane review based therapy guidelines along with intensified monitoring of renal function prolonged dialysis-free survival by 1.7 years. Conclusions: In a multivariate model of standardised glomerulonephritis therapy the presence of tubulointerstitial fibrosis was associated with death or progresssive renal disease, while prednisolone-based therapy regimens and intensified nephrological follow-up resulted in a significant delay of endstage-renal failure. This result should direct future health care policies because glomerulonephritis accounts for nearly 20% of the dialysis population.

KEYWORDS

Glomerulonephritis; Therapy; Evidence-based Medicine; Treatment Recommendation; Field Survey; Immunosuppression; Tubulointerstitial Fibrosis; Cox Regression Analysis

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