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Role of immunosuppressive therapy in IgAN nephropathy: Histological and biomarker predictors of response

Junseok Jeon[1], Youngmin Yoon[2], Kyungho Lee[1], Jung Eun Lee[1], Wooseong Huh[1], Hye Ryoun Jang[1]
[1]Department of Internal Medicine-Nephrology, Samsung Medical Center, Sungkyunkwan University School of Medicine, Korea, Republic of
[2]Department of Internal Medicine-Nephrology, Chosun University Hospital, Korea, Republic of

Objectives : IgA nephropathy (IgAN) is the most common primary glomerulonephritis. However, it remains unclear which patients with IgAN will improve after immunosuppressive therapy. We aimed to identify the characteristics of IgAN patients who may show good response to immunosuppressive therapy.
Methods : This prospective study enrolled 202 adult patients with biopsy-proven IgAN from 2010-2020. Good prognosis was defined as a reduction of urine protein-to-creatinine ratio (uP/Cr) ≥ 50% or less than 0.5 mg/mg and estimated glomerular filtration rate (eGFR) ≥ 60 mL/min/1.73 m^2 or less than 5 mL/min/1.73 m^2 reduction, 1 year from kidney biopsy. Histologic staging was assessed using the Haas classification.
Results : Among the 202 patients (mean age, 43 years; 49.5% male), 120 (59.4%) patients were classified as the good prognosis group at 1 year after biopsy. The risk of end-stage kidney disease and a 50% decline in eGFR were significantly higher in the control group than in the good prognosis group over a 10-year follow-up. Multivariable analysis identified immunosuppressive therapy (odds ratio [OR] 5.14, 95% confidence interval [CI] 2.43–10.9, $p < 0.01$), histological stage (OR 0.40, 95% CI 0.20–0.80, $p = 0.01$), uP/Cr (OR 0.73, 95% CI 0.58–0.91, $p < 0.01$), and $CD45^+$ leukocytes infiltration in kidney histology (OR 0.75, 95% CI 0.60–0.95, $p = 0.02$) as independent predictors of good prognosis. Among patients receiving immunosuppressive therapy, serum TGF-β1 concentration predicted a good prognosis (OR 1.16, 95% CI 1.04–1.31, $p = 0.01$), whereas $CD20^+$ B cell infiltration in kidney histology (OR 0.22, 95% CI 0.65–0.73, $p = 0.01$) predicted poor prognosis in patients treated with conservative therapy.
Conclusions : Immunosuppressive therapy and CD45+ leukocytes infiltration in kidney histology were associated with good prognosis, along with histological stage and uP/Cr. Furthermore, serum TGF-β1 concentration may serve as a marker of response to immunosuppressive therapy.