The Ambiguous Role of Serum Gd-IgA1 in IgA Nephropathy: An Evaluation of Its Biomarker Potential.

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Background and Aims: Immunoglobulin nephropathy (IgAN) is an autoimmune disease in which galactose-deficient IgA1 (Gd-IgA1) is targeted by anti-IgA1 antibodies (IgA or IgG), resulting in the formation of glomerular immune deposits. We aimed to evaluate Gd-IgA1 and IgA as a biomarker of IgAN progression.

Methods: Serum Gd-IgA1 was measured by enzyme-linked immunosorbent assay in patients with IgAN and healthy controls (HC). Relationships between serum Gd-IgA1 level and clinical and pathological findings were analysed using Spearman correlation or Mann-Whitney U test. We used the International IgAN Prediction Tool to assess the 5-year risk of a 50% decline in eGFR in IgAN patients.

Results: In 42 patients with IgAN, the median Gd-IgA1 level was 6358.5 (4891.8 - 9178.5). Interestingly, we found that the median level of Gd-IgA1 in HC was substantially elevated 4760.5 (3666.3-6556.5). Higher levels of Gd-IgA1 were associated with an increased 5-year risk of a 50% decrease in eGFR ($r=0.394$, $p=0.014$). Additionally, patients with a higher level of Gd-IgA1 were tented to have more than 10 ml/min decrease in eGFR level per year ($p=0.002$), as well as patients with a higher IgA ($p=0.047$). No association was found between Gd-IgA1 levels and kidney biopsy findings according to the Oxford classification (MEST-C score) eGFR, urine protein/creatinine excretion ratio, albuminuria, or hematuria. Gd-IgA1 ($p=0.005$) and IgA ($p=0.002$) levels were higher in patients with IgAN compared to HC.

Conclusion: Elevated Gd-IgA1 levels are associated with a higher risk of experiencing a significant decrease in eGFR. Therefore, Gd-IgA1 can be used as an additional factor for the detection of IgAN prognosis.