루푸스신염과 막사구체신염에서의 IgG subclass의 발현에 대한 비교 연구

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Differential Distribution and Expression of IgG Subclasses in Lupus Nephritis and Membranous Glomerulonephropathy

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Purpose : Lupus nephritis (LN) is one of life-threatening manifestations of systemic lupus erythematosus (SLE), the prototype of autoimmune disease and occurs in up to 60% of patients with SLE. LN should be differentiated from other glomerular diseases which are manifested as hematuria and proteinuria. Especially, LN, class V, also called membranous lupus nephritis (MLN), has similar histologic findings to idiopathic membranous glomerulonephropathy (MGN). Most cases of LN and MGN show IgG deposition in glomerular capillary wall and/or mesangium. However the expression of IgG subclasses between LN and MGN is different. We investigated the clinical usefulness of IgG subclasses in differentiating LN from MGN.

Methods : Renal biopsy specimens were obtained from 151 patients with LN and 52 patients with idiopathic or secondary MGN other than LN diagnosed in Hanyang University for five years. The lupus nephritis was classified according to ISN/RPS 2003 classification. The intensity of glomerular immunofluorescence staining for IgG subclasses was graded from 0 to 3+ in mesangium, glomerular periphiral capillary walls (PCW), tubules, interstitium and vessels. We made a decision tree using C5.0 algorithm with these findings to differentiate LN from MGN.

Results : A decision tree was constructed based on differential distribution and expression of IgG subclasses to differentiate LN and MGN. Specifically, expression of IgG1, IgG3, IgG4 in the PCW and IgG1 in the mesangium were useful findings. The decision tree has positive prediction rate of 91.2% (standard error: 1.7%) when estimated by 10-fold cross-validation. Another decision tree was made between MLN and MGN cases. The expression of IgG2 and IgG4 in the PCW and IgG1 in the mesangium were useful findings in the decision tree and positive prediction rate were 82.2% (standard error: 4.6%).

Conclusion : IgG subclass distribution is not associated with the different renal pathologies of proliferative LN and MLN. The intensity of IgG4 in MGN showed significant difference compared with that in LN group. The decision tree represents that the selective significance of both mesangial IgG1 and PCW IgG2 expression in MLN and PCW IgG4 expression in MGN. We conclude that the expression of IgG subclasses is useful for differentiation between MLN and MGN. We make a clinically relevant decision tree to differentiate LN from MGN using differential expression and distribution of IgG subclasses.

Key Words : 루푸스신염,막사구체신염,감별진단
Lupus nephritis, MGN, Differential diagnosis