

# Immunohistochemical characteristics of membranous nephropathy in children

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**Abstract** : The aim of our study is to clarify the association of IgG subclasses with complement activation in childhood idiopathic membranous nephropathy (MN). Immunofluorescence (IF) was performed on 20 children with idiopathic MN, 20 adult patients with idiopathic MN and 7 children with membranous lupus nephritis (LN). We used the following: antibodies against IgG, IgA, IgM, C1q, C3c, C4d, IgG1, IgG2, IgG3, IgG4, mannose binding lectin (MBL), C4-binding protein (C4-bp), factor B, C5b-9 and CD59. Based on the distribution of IgG along capillary loops by IF, two types of children's idiopathic MN were classified: segmental MN (S-MN; 7 cases) and global MN (G-MN; 13 cases). IF showed IgG1, IgG2, IgG3, IgG4, C3c, C4d, MBL, factor B, C4-bp, C5b-9 and CD59 in patients with G-MN, whereas it show IgG1, IgG3, C1q, C3c, C4d, C4-bp, C5b-9 and CD59 in those with S-MN. Segmental MN was found in only 2 of 352 adult idiopathic MN cases. None of cases revealed segmental MN in the 7 children with membranous LN. There was no difference in the distribution of IgG1, IgG2, IgG3 and IgG4 between children with G-MN and adults with idiopathic MN. A higher deposition of IgG4 was found in cases with G-MN than with membranous LN. A greater deposition of IgG1, IgG2 and IgG4 was noticed in those with idiopathic MN and membranous LN than those with S-MN. Light microscopy showed a difference in mesangial cellularity between G-MN and S-MN. However, a greater increase of electron dense deposits in the mesangial area was observed in those with S-MN than in those with G-MN. Ehrenreich-Churg's stage electron microscopy classification was similar for both G-MN and S-MN. There was a higher deposition of IgG1, IgG2 and IgG4 in cases with G-MN than in those with S-MN, while the intensity of C1q deposits was higher in S-MN than in G-MN cases. In contrast, the intensity of factor B and MBL was greater in G-MN than in S-MN cases. We concluded first that segmental MN was found only in childhood idiopathic MN and that pathological and immunological findings in S-MN were different among adult idiopathic MN and membranous LN; and second, that S-MN showed the complement activation of the classical pathway associated with IgG1 and IgG3, whereas G-MN revealed the complement activation of both the alternative and lectin pathways associated with IgG2 and IgG4.

**Key words** : Membranous nephropathy, IgG subclass, Complement pathway, Lectin pathway