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## **Clinical meaning of C4d deposition in pediatric IgA nephropathy**

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**Objectives:** Immunoglobulin A nephropathy (IgAN) is one of the most common causes of primary glomerulonephritis and is characterized by predominant IgA deposition in the glomerulus mesangium. Recently, it has been well-known that the activation of complement system plays an important role in the development and progression of IgAN. The aim of this study is to investigate the association between the evidence of C4d staining and clinical/histopathological features of pediatric IgAN patients.

### **Methods:**

Fifty-six pediatric patients diagnosed with IgA nephropathy through renal biopsy from 2006 to 2017 were reviewed retrospectively. Immunohistochemical C4d staining was performed in all biopsy tissues. Clinical/histopathological features were statistically analyzed according to C4d staining positivity.

**Results:** A total of 56 patients (male 58.9%, female 41.1%) were included in the study and the mean age at diagnosis was  $12.1 \pm 4.7$  years. According to the Haas' classification, the number of patients with subclass I, II, III, and IV was 23 (41.1%), 2 (3.6%), 18 (32.1%) and 13 (23.2%), respectively. Patients with positive C4d staining were 31 (55.4%) and the higher staging of the Haas' classification was significantly associated with the positive rate of C4d staining ( $p < 0.001$ ). The positive rate of C4d in patients with subclass I was 12.9% ( $n=4$ ), but in them with subclass III and IV were 45.2% ( $n=14$ ) and 38.7% ( $n=12$ ), respectively. In addition, as for the Oxford classification, positive C4d staining turned out to be significantly associated with the evidence of mesangial proliferation (M1) ( $p < 0.001$ ). The positive rate of C4d in patients with M1 was 67.7% ( $n=21$ ), but in them with M0, 32.3% ( $n=10$ ). However, there was no significant association of the evidence of endocapillary hypercellularity, segmental sclerosis, and tubulointerstitial fibrosis/atrophy between the patients with positive C4d and them with negative C4d.

**Conclusions:** Positive C4d staining was found to be significantly associated with clinical/histopathological progression of IgAN.