Clinical implication of C1q deposition in kidney transplantation

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Background: C1q nephropathy is an uncommon type of glomerulonephritis and is characterized by an extensive and dominant C1q mesangial deposition in the absence of systemic lupus erythematosus. However, there are limited studies about C1q deposition in renal allografts.

Methods: Between January 2005 and December 2018, 1,742 kidney transplantations were performed in Seoul National University Hospital. C1q deposition was detected in 104 of these cases. Twenty-eight cases had intense ($\geq 2+$) C1q-dominance and were reviewed in this study.

Results: Among the 28 cases, 10 cases were detected in the post-reperfusion biopsy and 18 cases were detected in the post-operative periods, which includes both indication ($n=16$) and protocol biopsy ($n=2$). Baseline characteristics were similar in both groups except preoperative desensitization was more frequent in the post-reperfusion biopsy ($P=0.037$). The post-reperfusion C1q depositions either disappeared ($n=9$, 90%) or diminished ($n=1$, 10%) in the follow-up biopsy ($P=0.001$). C1q disappearance or diminishing occurred at protocol biopsy in 70% of patients. The postoperative C1q depositions were frequently accompanied by borderline acute T-cell mediated or acute T-cell mediated rejection ($P=0.004$). Further analysis of the 15 patients with follow-up biopsy showed that although C1q disappeared or diminished there was an increase in rejection ($P=0.039$) and IFTA ($P=0.025$).

Conclusions: Spontaneous disappearance and diminishing of C1q deposition in the post-reperfusion biopsy occurred. C1q deposition in the post-operative biopsy was accompanied by T-cell mediated rejection or interstitial fibrosis and tubular atrophy or BK or immunoglobulin A nephropathy. Due to the limited number of cases, conclusions about renal allograft outcomes could not be made. However, such findings may have clinical significance, and further studies need to be taken to identify the natural history of C1q deposition and C1q nephropathy.

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