Comparison of 2-week and 1-year protocol renal allograft biopsies regarding technical feasibility and clinical outcomes

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Background: Renal allograft biopsy improves early detection and treatment of subclinical rejection. Still, there are rare reports about the outcomes of 2-week protocol biopsy. To compare 2-week and 1-year biopsies in terms of technical feasibility and clinical outcomes.

Methods: A total of 916 renal allograft biopsies were performed in adult recipients between 2012 and 2019. Two-week and 1-year biopsies were guided with ultrasound in 882 and 556 patients, respectively. These protocol biopsies were compared in terms of technical feasibility and clinical outcomes. Standard references were clinical-laboratory findings and biopsy examinations. Non-inferiority test and univariate analysis were used for statistical analysis.

Results: There were no significant differences regarding baseline characteristics between the 2-week and 1-year biopsies. All allograft biopsies were technically successful. Major complication (Clavien-Dindo grading III–IV) rates of 2-week and 1-year biopsies were 0.23% (2/882) and 0.18% (1/556) ($P=0.645$). On non-inferiority analysis, the major complication rate of 2-week biopsy was not inferior to that of 1-year biopsy. Univariate analysis showed that delayed graft function, pre-biopsy platelet $<100K$, pre-biopsy creatinine ≥ 2.0 mg/dL and pre-biopsy blood urea nitrogen (BUN) ≥ 40 mg/dL were associated with major complications in 2-week biopsy.

Conclusions: Two-week biopsy as well as 1-year biopsy is technically feasible and safe. Prior to biopsy, platelet, creatinine, and BUN should be carefully checked to predict major complication.

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