THE ASSOCIATION BETWEEN HISTOLOGICAL LESIONS, PROTEINURIA AND SURVIVAL OF KIDNEY GRAFTS

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Introduction. Renal transplantation takes an important role in the treatment of end-stage chronic kidney disease. Even small damages of the structures of kidneys, can result in proteinuria. The measurement by 24h urine collection and core biopsy remains the “gold standard” for the diagnosis of renal graft damage.

Aim. Estimate the association of severity of histological lesions in renal graft biopsies with proteinuria and survival.

Materials and methods. The study included 57 (24 (42%) male / 33 (58%) female) patients, whom core biopsy of graft has been done in year 2013. The mean age of the patients was 43 (12–71) years. For 5 (9%) patients that was second kidney graft. Biopsies were taken ~4 years after transplantation and were evaluated with the light microscope. 8 (14%) patients have lost their grafts in the period of one year after biopsy.

Spearman’s test was used to assess correlation between severity of histological lesion and amount of proteinuria (estimated by protein measurement in 24h urine collection) and Kaplan-Meier test to estimate the survival.

Results. There was found glomerulitis in 20 (35%) biopsies, 14 (25%) mesangial matrix increase, 9 (16%) glomerulopathy, 13 (23%) tubular damage, 7 (12%) peritubular capilaritis, 10 (18%) interstitial inflammation, 24 (42%) interstitial fibrosis and 30 (53%) tubular atrophy, 3 (5%) arteritis and 22 (39%) chronic vascular changes, 25 (44%) with PAS-positive hyaline thickening and 35 (61%) with C4d deposits. For 6 (11%) patients was sclerosed > 30% from all glomeruli.

Proteinuria was detected in 23 (40%) recipients on biopsy day and in 22 (39%) after a year. 9 (39%) patients had nephrotic range proteinuria, 3 (13%) – moderate (1–3.5 g / 24 h), and 11 (48%) – light (< 1 g / 24 h).

On the biopsy day there was detected strong correlation between severity of proteinuria and glomerulitis ($r_s = 0.443$, $p = 0.001$), chronic glomerular ($r_s = 0.474$, $p < 0.001$) and mesangial lesion ($r_s = 0.418$, $p = 0.001$) and with chronic vascular ($r_s = 0.363$, $p = 0.006$) and glomerular lesion ($r_s = 0.265$, $p = 0.048$) after a year. The deterioration of proteinuria during a year was statistically significant correlated with severity of chronic vascular lesion ($r_s = 0.362$, $p = 0.007$). There was association in the one-year graft survival with severity of interstitial fibrosis ($p = 0.03$) and peritubular capilaritis ($p < 0.001$).

Conclusion. Histological lesions found by kidney graft biopsy are significant determinants for proteinuria and survival. Proteinuria was dependent of glomerular, mesangial and vascular, but not tubular lesions. Graft survival was determined by severity of interstitial fibrosis and peritubular capilaritis.