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Lymphocyte And Capillary Densities in Renal Allografts are Affected by Dietary Salt Intake

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Objectives : Lymphocytes and endothelial cells mediate ischemia-reperfusion injury and transplant outcomes. Their densities in kidney transplant(KT) tissue are associated with graft outcome. Considering the role of salt in lymphocyte and endothelial cell activation/function, we investigated the impact of dietary salt intake on lymphocyte and capillary densities in kidney transplants.
Methods : KT recipients without rejections were identified from a protocol biopsy cohort(2012–2017) who underwent biopsies at 2 weeks and 12 months after KT. Dietary salt intake levels were assessed by 24h urine sodium, measured right before donation for donors and at post-KT 12 months for recipients. All recipients were under a controlled hospital diet during admission for KT(at least until 2 week biopsy). Biopsy sections were stained with CD45, CD3, CD20, and CD31 immunohistochemistry. The densities of positive cells were quantified by an automated imaging analysis system and analyzed per donors' and recipients' sodium intake levels.
Results : At 2 weeks after KT, renal allografts from donors under a low-salt diet had lower densities of total leukocyte(CD45, low-salt 0.27±0.06%; normal-salt 0.74±0.15%, P=0.060; high-salt 0.91±0.26%, P=0.019), T cells(CD3, 1.79±0.22%; 2.71±0.24%, P=0.039; 3.5±0.40%, P=0.001), and B cells(CD20, 0.79±0.11%; 1.68±0.21%, P=0.050; 2.07±0.56%, P=0.011) and showed a higher capillary density(CD31, 29.4±2.4%; 9.9±1.9%, P<0.001; 16.6±2.0%, P=0.002). At 12 months after KT, there were no significant correlations between donors' dietary sodium intake and leukocyte or capillary densities. B cell densities in renal allografts from recipients under a low-salt diet were lower compared to those with high-salt diet(CD20, low-salt 0.67±0.15%; normal-salt 1.03±0.14%, P=0.570; high-salt 1.99±0.46%, P=0.008).
Conclusions : Lymphocyte densities and capillary rarefaction in renal allografts were affected by dietary salt intake of donors in early post-KT period, but not in later period. Later B cell density was influenced by dietary salt intake of recipients. Dietary salt may play a potential role in modulating immunologic microenvironment of renal allografts.