

Impact of Functioning Arteriovenous Fistula (AVF) on Left Ventricular (LV) Mass and Function in Renal Transplant Patients : A Prospective Randomized Study

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Cardiovascular disease is the leading cause of morbidity and mortality in renal transplant recipients. Enhanced cardiac load by the persistence of functioning AVF in posttransplant period is associated with LV hypertrophy and may adversely influence cardiac outcome.

To investigate the impact of AVF on LV mass and function in kidney transplant recipients, 46 patients with functioning AVF were randomly assigned to surgical closure of AVF (group 1, n=23) or maintenance of fistula (group 2, n=23). Additional patients with no functional AVF, matched for age, sex and posttransplant months were selected for no fistula control (group 3, n=25). Serum creatinine of all participants was stable (1.4 ± 0.3 mg/dL). Mean age was 46 ± 11 . Mean posttransplant month was 78 ± 53 (12-161). Echocardiography was performed at 0, 1 and 6 months in group 1, and at 0 and 6 months in group 2 and 3. Three patients of group 1 did not agree to close the fistula and only baseline data of these patients was analyzed. In two patients of group 2, fistula was spontaneously closed during study period. Baseline LV mass was larger in patients with functioning AVF (group 1 and 2) compared with no AVF (230.9 ± 59.1 gram in group 1 and 2 vs 202.2 ± 49.2 in group 3, $p=0.034$). Baseline echocardiographic indices of systolic and diastolic LV function such as EF, E/A, E/E' and Tei index were not significantly different between groups. In patients whose AVF was surgically closed, LV mass (247.7 ± 76.8 to 235.2 ± 66.5 , $p=0.015$) and LV mass index (144.0 ± 10.1 to 137.1 ± 8.6 , $p=0.02$) significantly reduced at one month after closure, and no further significant change was observed at 6 months. No significant change in LV systolic and diastolic performance indices were observed. BNP, cTnT and CRP did not differ between groups in baseline value and did not significantly change after fistula closure. We conclude that the persistence of functioning AVF in renal transplant patients is associated with LVH, and which can be reduced by closure of fistula. As LVH is one of major determinants of cardiovascular outcome in transplant patients as well as in general population, it would be prudent to close the fistula in patients with stable graft function.