IMPACT OF CLOSURE OF ARTERIOVENOUS FISTULA

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Abstract
Left ventricular hypertrophy is common in renal transplant patients. One of the factors that might contribute to this phenomenon is the persisting presence of an arteriovenous (AV) fistula. Several reports have described the presence of high-output cardiac failure, which subsided after closure of the AV fistula. However, the long-term effects of elective closure of the AV fistula on left ventricular dimensions in stable renal transplant patients have never been prospectively studied.

Keywords: Left ventricular hypertrophy, renal transplant, AV fistula

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1. BACKGROUND

Left ventricular hypertrophy is common in renal transplant patients. One of the factors that might contribute to this phenomenon is the persisting presence of an arteriovenous (AV) fistula. Several reports have described the presence of high-output cardiac failure, which subsided after closure of the AV fistula. However, the long-term effects of elective closure of the AV fistula on left ventricular dimensions in stable renal transplant patients have never been prospectively studied.

kidney transplantation is the first line treatment in the end stage renal disease(ESRD) due to better clinical outcomes, enhanced quality of life (QOL) and its higher cost effectiveness compared to other renal replacement therapies [1]. The intensive growth of multiple national as well as international transplantation programs has led to the point where both hemodialysis and peritoneal dialysis have become bridging-therapies during which the patients are waiting for a suitable kidney donor. Appropriate medical care, including regular follow-ups, an immunosuppressive regimen and early acute rejection treatment have also made it possible to obtain low graft loss rates of around 3% per year [2].

Arteriovenous (AV) fistulas are considered the gold standard of long-term vascular access for haemodialysis dependent end-stage renal disease patients based on complication and patency rate [3].

The influence of persistent arteriovenous fistula (AVF) on the condition of kidney transplant recipients (KTRs) with past history of hemodialysis is a controversial topic of debate. Several studies have already shown that the persistent AVF in this clinical setting leads to ongoing maladaptive cardiac remodeling, which seems to be at least partially reversible after AVF ligation [4].

Multiple studies have also revealed a positive correlation among AVF flow, cardiac output, and diastolic dysfunction severity, which is a burden for patients with an already underlying cardiovascular disease. Furthermore, proximally located AVF have been shown to present higher flow than the distal ones, as well as they are related to more severe cardiac remodeling. On the other hand, some authors suggest that the ligation of active AVF may be associated with accelerated decline of kidney function [5].

A cardioprotective impact of AVF closure has been reported in a few prospective studies including a limited number of patients [4]. In contrast, others concluded that AVF persistence for prolonged periods of time post-KTx had minor consequences on cardiac morphology and function [3]. Hence, on the basis of these controversial findings, AVF closure is not routinely recommended in KTRs with stable renal allograft function. Moreover, the creation of a new AVF in case of ESRD in KTRs may be extremely difficult and not always feasible when peripheral veins are exhausted. Surgical ligation is usually performed in patients with specific indications, including high-flow fistula, high-risk cardiovascular status or cosmetic reasons.

2. REFERENCES

1. Cameron JI, Whiteside C, Katz J, Devins GM. Differences in quality of life across renal replacement therapies: A meta-analytic comparison. Am J Kidney Dis. 2000; 35(4):629–37
2. Webster G, Wu J, Terner M, Ivis F, de Sa E, Hall N. CORR Report: Treatment of end-stage organ failure in Canada, 2004 to 2013. 2015;(April):1–129.
3. Ozeki T, Shimizu H, Fujita Y, Inaguma D, Maruyama S, Ohyama Y, et al. The type of vascular access and the incidence of mortality in Japanese dialysis patients. Intern Med. 2017;56(5):481–5.
4. Rao NN, Stokes MB, Rajwani A, et al. Effects of arteriovenous fistula ligation on cardiac structure and RENAL FAILURE 121 function in kidney transplant recipients. Circulation. 2019; 139:2809–2818.
5. Weekers L, Vanderweckene P, Pottel H, et al. The closure of arteriovenous fistula in kidney transplant recipients is associated with an acceleration of kidney function decline. Nephrol Dial Transplant. 2017; 32: 196–200.