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A single center's experience of vascular access monitoring by hemodilution method

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Objectives : After arteriovenous fistula formation, vascular flow increased by venous dilation and vascular remodeling. The patency of vascular access is mandatory for maintenance hemodialysis. Nephrologist have always tried to improve the vascular access by various method like physical exam, Doppler ultrasound and so on. We hope to share our experience of vascular flow monitoring with hemodilution method.

Methods : We collected patients' data which access flow was checked at least 6 times and more from Nov. 2014 to Dec. 2016. The data included fistula flow, fistula formation date, dialysis adequacy, sex, age and cause of dialysis. Fistula flow was measured by hemodilution method (Transonic HD03) during the dialysis session at every month. Kt/V was checked at every 3 month. Vascular intervention for maintaining flow was done by the result of HD03 (< 450 ml/min) or physical examination.

Results : The 118 patients were monitored and 38 patients got vascular intervention (1 thrombolysis, 1 re-creation and 36 balloon dilatation). The 18 patients needed intervention despite of adequate access flow and there were no difference with adequate flow group in terms of underlying disease (diabetes, $p = 0.8$), Kt/V ($p = 0.7$), and fistula category (native/graft; $p = 0.2$, upper/forearm; $p = 0.5$). The 9 patients could maintain vascular access without intervention despite of low flow and they all had native fistula at forearm.

Conclusions : Vascular monitoring by hemodilution method is easy, convenient and helpful. However, we should keep in mind that good vascular flow with hemodilution method is not always guarantee the fistula patency. Stenotic vascular lesion could not be distinguished by access flow only. Comprehensive approach is needed for better survival of vascular access.

Keywords : Fistula, Hemodilution, Intervention