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Dialysis

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The Accuracy of 'Rule of 6s' for Evaluating Native Arteriovenous Fistula Maturation

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Background: The maturation of native arteriovenous fistula (AVF) can be evaluated clinically by a skillful medical personnel or sonographically. 'Rule of 6s' is commonly used for evaluating AVF maturation by duplex ultrasound, but there are controversies in its accuracy. Therefore, we investigated the accuracy of 'Rule of 6s' for AVF maturation in our center.

Methods: The newly created 165 native AVFs were enrolled to this study. Duplex ultrasound examination for evaluating AVF maturation was performed at 4 to 8 weeks after AVF creation.

Results: 64 AVF were compatible to 'Rule of 6s' and 56 of them were successfully cannulated whereas 101 AVF were incompatible to 'Rule of 6s' and 62 of them could not be cannulated. Therefore, the sensitivity and specificity of 'Rule of 6s' were 58.9% and 88.6% respectively. In Receiver operating characteristic (ROC) curve for predicting successful cannulation, venous diameter >5.7mm showed 93.5% sensitivity and 80.3% specificity, which was the most appropriate one among the components of 'Rule of 6s'. When the sonographic maturation criteria by University of Alabama Birmingham (UAB), including venous diameter >4 mm, Qac > 500 mL/min and depth < 5 mm, were applied, its sensitivity and specificity were 91.6% and 54.3% respectively.

Conclusion: Our study showed 'Rule of 6s' had the lower sensitivity for evaluating AVF maturation and the UAB criteria is more appropriate for screening matured AVF.

Keywords: Vascular access, arteriovenous fistula, maturation