

## 중재시술이 필요없는 성공적인 동정맥루 성숙에 있어서 수술전 초음파 지도에서 측정된 저항계수의 역할

가톨릭대학교 의과대학 신장내과<sup>1</sup>, 가톨릭대학교 의과대학 외과<sup>2</sup>

황현석<sup>1</sup>, 김예니<sup>1</sup>, 황정기<sup>2</sup>, 김지일<sup>2</sup>, 김석영<sup>1</sup>, 김용수<sup>1</sup>

### Resistance Index in Ultrasound Mapping Predicts Successful Maturation of Arteriovenous Fistula without Interventional Assistance

Hyeon Seok Hwang<sup>1</sup>, Yaeni Kim<sup>1</sup>, Jeong Kye Hwang<sup>2</sup>, Ji Il Kim<sup>2</sup>, Suk Young Kim<sup>1</sup>, Yong-Soo Kim<sup>1</sup>

Division of Nephrology<sup>1</sup>, College of Medicine, The Catholic University of Korea  
Department of Surgery<sup>2</sup>, College of Medicine, The Catholic University of Korea

**Background:** Arteriovenous fistula (AVF) is the most preferred vascular access for hemodialysis and it frequently needs interventional assistance to facilitate maturation. However, there is no reliable indicator to identify which AVF successfully matures without interventional assistance.

**Methods:** In 174 patients, who had mature AVF, parameters of duplex ultrasound (US) were analyzed to evaluate whether preoperative vascular mapping predicts unassisted AVF maturation.

**Results:** Successful AVF maturation without interventional assistance was observed in 142 (81.1%) patients. The area under the receiver-operating characteristic curve used to predict unassisted AVF maturation was 0.61 of resistance index (RI) ( $p=0.046$ ). The best cutoff value of RI was 0.80 (sensitivity, 0.56; specificity 0.70). The patients with  $RI \leq 0.8$  achieved significantly increased blood flow rate at one week after access creation than those with  $RI > 0.8$  ( $1201.6 \pm 791.0$  ml/min vs.  $844.5 \pm 509.8$  ml/min;  $p=0.002$ ). In multivariate logistic regression, patients with  $RI \leq 0.8$  were independently associated with the higher rate of unassisted AVF maturation (OR 3.59; 95% CI 1.35-9.55;  $p=0.010$ ). Other predictors of unassisted maturation included female gender, body mass index, history of previous access and venous diameter. Of the patients with assisted maturation, 23 (13.2%) patients had access stenotic lesions in angiography and they had a significantly higher RI values in US mapping compared to those with unassisted AVF maturation. ( $0.79 \pm 0.27$  vs.  $0.67 \pm 0.27$ ;  $p=0.049$ ).

**Conclusion:** The low RI value ( $\leq 0.8$ ) in preoperative US vascular mapping is an independent predictor for AVF maturation without interventional assistance, and patients with high RI value should be closely monitored for the necessity of intervention, especially for the access stenotic lesions.

**Key Words:** 자가동정맥루, 성숙, 저항계수, 중재  
Arteriovenous fistula, Resistance index, Intervention