

THE SIGNIFICANCE OF ULTRASOUND VASCULAR MAPPING BEFORE THE CREATION OF ARTERIO-VEINOUS FISTULA FOR HEMODIALYSIS.



Paweł Stróżecki¹, Mariusz Flisiński¹, Andrzej Kapała², Jacek Manitius¹

¹Dept of Nephrology, Hypertension and Internal Medicine

²Dept of General and Endocrine Surgery

Nicolaus Copernicus University, The Ludwik Rydygier Collegium Medicum in Bydgoszcz, Poland

Dr. Antoni Jurasz University Hospital No.1 in Bydgoszcz, Poland



OBJECTIVES

It was shown in several studies that preoperative ultrasound vascular mapping increases the chance of successful arterio-venous fistula (AVF) creation. Nevertheless, attempts to create AVF without prior ultrasound evaluation are performed. According to the literature following criteria indicates suitable vessels for creation of native AVF: artery internal diameter $\geq 2,0$ mm and vein diameter $\geq 2,5$ mm. The aim of this study was to evaluate the prevalence of suitable radial artery and cephalic vein to create forearm radio-cephalic AVF.

METHODS

Vascular ultrasound mapping with Doppler flow assessment was performed in 63 patients (F=23, M=41), aged 23-88 years, scheduled for AVF creation, of whom 23 (41%) were aged ≥ 65 years. Upper limb arteries and veins were examined in 86 limbs (54 left and 32 right). Limbs with dressing or vein cannula were not evaluated.

RESULTS

Brachial artery (BA) was visualized in all examined limbs. Mean BA internal diameter (ID) was $3,8 \pm 0,5$ mm, and BA flow was 135 ± 88 ml/min. Proximal radial artery (PRA) was visualized in 81 (94%) of examined limbs, PRA ID was $2,2 \pm 0,4$ mm, and PRA flow 42 ± 37 ml/min. PRA $\geq 2,0$ mm was found in 60 (70%) of examined limbs. Proximal forearm cephalic vein (CV) was visualized in 68 (79%) of the limbs, and CV diameter of $\geq 2,5$ mm was found in 54 (63%) of the limbs. In proximal forearm both ultrasound criteria were met in 49 (57%) of the examined limbs. Among patients aged ≥ 65 years, these criteria were met in 18 of the examined 34 limbs (53%).

Radial artery in distal forearm (DRA) was visualized in 74 (86%) of the examined limbs. DRA ID was $1,8 \pm 0,4$ mm, and DRA flow 28 ± 22 ml/min. DRA $\geq 2,0$ mm was found in 29 (34%) of the limbs. Distal forearm cephalic vein (CV) was visualized in 47 (55%) of the limbs, and CV diameter of $\geq 2,5$ mm was found in 33 (38%) of the limbs. In distal forearm both ultrasound criteria were met in 18 (21%) of the examined limbs. Among patients aged ≥ 65 years, these criteria were met in 4 of the examined 34 limbs (12%).

CONCLUSIONS

Making attempt to create distal forearm radio-cephalic fistula without prior ultrasound mapping may lead to a high risk of procedure failure, particularly in elderly patients.

