USE OF REAL-TIME ULTRASOUND GUIDANCE FOR TEMPORARY FEMORAL VEIN CATHETERIZATION

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Introduction and Aims

◆ Although clinical guidelines recommend the use of real-time-ultrasound for catheter cannulation over the standard anatomical-landmark techniques, there is limited data about temporary femoral vein catheterization for hemodialysis.

◆ Aims: to compare the effectiveness, safety and complications of temporary femoral vein cannulation using landmark-guided and two-dimensional ultrasound-guided puncture techniques.

Patients and Methods

◆ Longitudinal observational study in a cohort of adult patients in which temporary femoral catheters were placed as the vascular access for unplanned renal replacement therapy (hemodialysis or continuous replacement therapy).

◆ Demographic features and clinical parameters including platelet count, INR and concomitant treatment with antiplatelet/anticoagulant therapy, were recorded at the time of study entry. The number of needle passes and arterial punctures were also recorded.

◆ A total 146 femoral catheters were placed over a period of 12 months: 95 cases (65%) were placed using the real-time ultrasound guidance and 51 (35%) with the traditional landmark-guided technique. The criteria for choosing one cannulation method over the other were both the patient's clinical condition and physician's personal experience.

◆ Complications were categorized into six groups: development of hematoma, pseudoaneurysm, thrombosis of femoral vein, malfunctioning catheter, inability to advance the cannula into the vein during insertion, and short-term catheter-related infection.

◆ Results are expressed as the arithmetic mean ± standard deviation, or median and interquartile range [IQR], as appropriate. Parametric and non-parametric tests were chosen as appropriate for descriptive comparisons of continuous variables, and chi-squared test for categorical variables.

Results

Characteristics of study patients

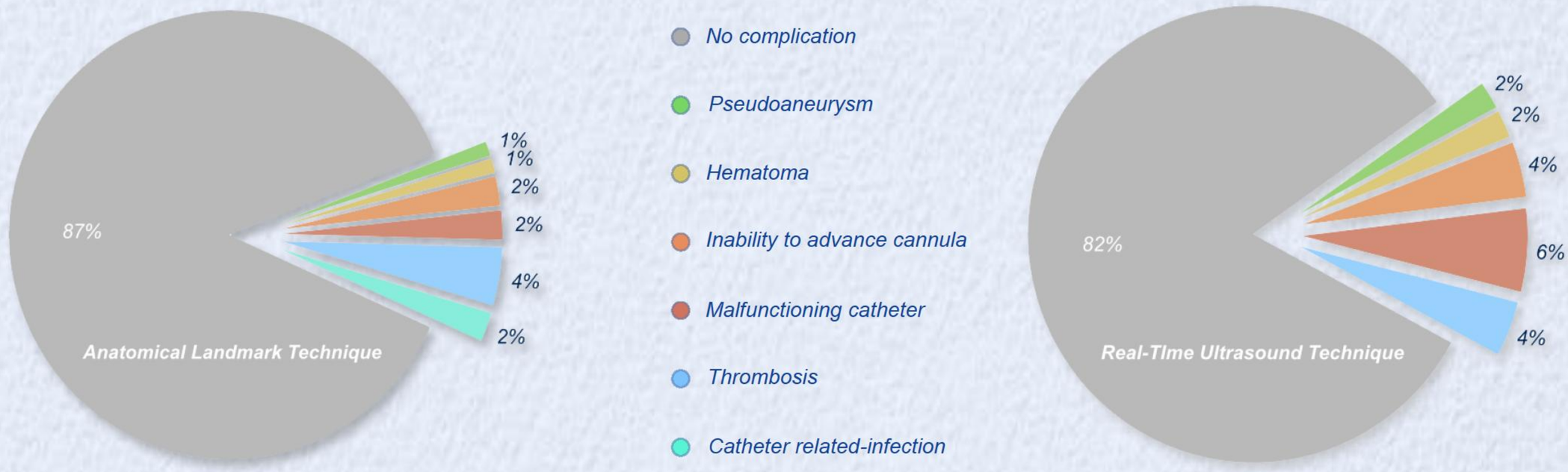
	Total	Real-Time Ultrasound Technique	Anatomical Landmark Technique	p*
Patients, n (%)	146	95 (65)	51 (35)	
Gender, male (%)	90 (62)	55 (58)	35 (69)	0.274
Age, years	69±13	66±13	72±11	0.007
Hepatopathy, n (%)	18 (12)	15 (16)	3 (6)	0.038
On antiplatelet therapy, n (%)	40 (27)	20 (21)	20 (39)	0.021
On anticoagulant therapy, n (%)	33 (23)	22 (23)	11 (22)	0.991
Platelet count, $10^3/mm^3$	192±110	194±117	189±99	0.764
INR**	1.1±1	1.2±1.2	1.1±1	0,900
Number of needle passes, median [IQR]	1 [1-2]	1 [1-2]	1 [1-3]	0.492

** Statistical significance between subgroups.*
*** International Normalized Ratio*

Complications related to catheter cannulation

	Total	Real-Time Ultrasound Technique	Anatomical Landmark Technique
No complication, n(%)	125 (86)	83 (87)	42 (82)
Pseudoaneurysm, n(%)	2 (1)	1 (1)	1 (2)
Hematoma, n(%)	2 (1)	1 (1)	1 (2)
Inability to advance cannula, n(%)	4 (3)	2 (2)	2 (4)
Malfunctioning catheter, n(%)	5 (3)	2 (2)	3 (6)
Thrombosis, n(%)	6 (4)	4 (4)	2 (4)
Catheter-related infection, n(%)	2 (1)	2 (2)	0 (0)

p=0.763



Conclusions

◆ In our experience no significant differences were found between both techniques related to success in catheterization and complications rate.

◆ These results may be explained by the great experience of nephrologists in cannulating femoral vein using traditional landmark-guided technique.

◆ These findings, in line with other studies, point out the lack of benefits of ultrasound-guided cannulation of femoral vein.

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