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Clinical Usefulness of Monitoring Using the Physical Findings Ordinal Scale for Vascular Access

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Objectives : Physical findings by palpation and auscultation are very important in screening for vascular access stenosis. However, physical findings are sensory assessments that are difficult to evaluate in a standardized manner, and the experience of the medical staff performing the physical findings has a significant impact on their evaluation. The purpose of the present study was to develop an ordinal scale of vascular access physical findings and to determine whether the use of this scale can contribute to early detection and intervention of vascular access abnormalities.
Methods : An ordinal scale for palpation and auscultation of vascular access was developed for hemodialysis patients with an arteriovenous fistula (AVF) or arteriovenous graft (AVG). The Vascular Access Physical Finding Ordinal Scale (VAPOS) was assessed before each dialysis session. The number of cases of vascular access abnormalities that prompted nurses and clinical engineers to consult physicians was examined one year before the introduction of the VAPOS and after the start of the VAPOS evaluation.
Results : Prior to the introduction of VAPOS, the most common reason for physician consultation for vascular access abnormalities was poor blood draw (28 cases, 50.9%), while physical examination findings were the trigger in 24 cases (43.6%). After the introduction of VAPOS, poor blood draw significantly decreased to 13 cases (14.7%) and physical findings significantly increased to 88 cases (61.5%). Physical findings included auscultation: 19 (21.6%) cases of volume change, 22 (25.0%) cases of high-pitched sounds, and 16 (18.2%) cases of intermittent sounds and palpation: 7 cases (8.0%).
Conclusions : The use of an ordinal scale for physical findings by auscultation and palpation of vascular access achieved early physician consultation before poor blood draw occurred, contributing to early intervention.

Table 1 .jpg

Comparison of consultation items before and after the introduction of VASC and VAPOS

observe	Poor blood removal	Physical findings	Other	sum
2012	28	24	3	55
2013	13	64		88
sum	41	88	14	143

Result of mxn Chi square test and Fisher's test		there is <10 number in data
Yates Chi=19.4463	5.991464547	P<0.05 significant difference*
Yates Chi=19.4463	9.210340372	P<0.01 significant difference**

Table 1 .jpg

Number and ratio of consultation on VA abnormalities before and after the introduction of VASC and VAPOS (2012-2013)

		2012		2013		Rate of change	
Number of consultations due to poor blood removal (%)		28 (50.9%)		13 (14.8%)		-0.536	
Number of consultations by auscultation (%)	Volume change	20 (36.4%)	7 (12.7%)	57 (64.8%)	19 (21.6%)	1.850	1.714
	High pitch sound		11 (20.0%)		22 (25.0%)		1.000
	Intermittent sound		2 (3.6%)		16 (18.2%)		7.000
Number of consultations by palpation (%)		4 (7.3%)		7 (8.0%)		0.750	
Number of consultations based on physical findings (%)		24 (43.6%)		64 (72.7%)		1.667	
Number of all consultations (%)		55 (100%)		88 (100%)		0.600	
Total number of medical interventions		49		99		1.020	