

Experience of the use of Veinviewer® for DIVA patients with hemophilia

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Objectives

In Korea, The central venous administration of factor concentrates is rarely performed because insurance coverage of factor consumption for central venous catheterization. So the majority of the pediatric patients with hemophilia use peripheral veins for the injection of factor concentrates. If the patients are small and young, not only patients themselves but also caregivers and the health care personnel are subjected to great stress. We evaluated the reliability of Veinviewer® which is a device that delineates subcutaneous veins using near-infrared light, using DIVA (difficult intravenous access)scores in hemophilic patients younger than 4years old.

Methods

Seventy-two patients younger than 4 years old visited the Korea Hemophilia Foundation Clinic from September 2011 to May 2012. Their mean age was 2.16 years old. The DIVA scores according to (Table 1) the age subgroups were 3, 2.3, 1.33, 1.29, and 1.69 points respectively. Diva mean score was 1.79 points. After applying of tourniquet, thirty-six out of 72 patients had the veins palpable but not visible or the veins neither Palpable nor visible. Their mean DIVA score was 2.28 points. For them, we have used Veinviewer® for Intravenous access (Table2).

To determine inter observers agreement for the study, 2 nurses independently complete the subjective part of the data for ; nursing prediction of case of intravenous access and ability to visualize and palpate the vein with and without the tourniquet at attempt site.

Table 1. DIVA score (4-variable)

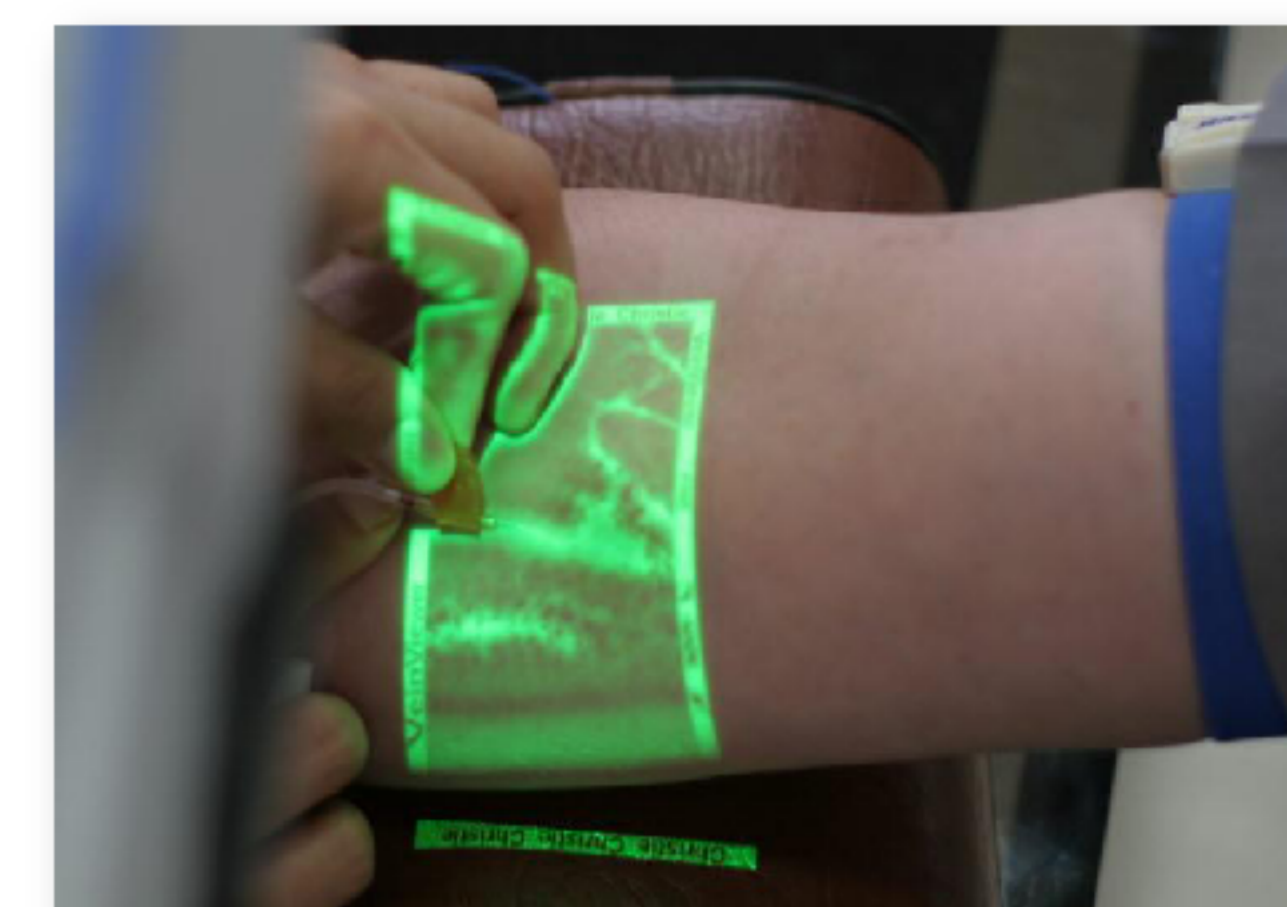
Predictor Variable	Score			
	0	1	2	3
vein visible after tourniquet	Visible		Not visible	
vein palpable after tourniquet	Palpable		Not palpable	
Age category	≥ 3 years old(older)	1-2 years old (toddler)		<1 year old (infant)
History of prematurity	No premature			premature

The sum of point values of the variables by the DIVA score (range0-10)

Before & after use Veinviewer®



Before



After



VEINVIEWER® FLEX

The Veinviewer® utilized visible and near Infrared light for vascular imaging to illuminate and project the subcutaneous structure directly onto a patient's skin.

Results

Table 2. Use of Veinviewer®

Age (yr's)	Pt (n)	Variable of DIVA score	User group		Not user group		Sum
			DIVA score	Attempts	DIVA score	Attempts	
0	1	Palpable, not visible					0
		Not Palpable, not visible					0
		Palpable & visible			3	1	1
1	26	Palpable, not visible	3	1.45			11
		Not Palpable, not visible	5	1			3
		Palpable & visible			1	1.17	12
2	18	Palpable, not visible	3	1.25			4
		Not Palpable, not visible					0
		Palpable & visible			1.14	1	14
3	14	Palpable, not visible	2	1			5
		Not Palpable, not visible	4	1			2
		Palpable & visible			0	1.14	7
4	13	Palpable, not visible					0
		Not Palpable, not visible	2	1.23			11
		Palpable & visible			0	1	2
Total grand			2.78	1.19	0.8	1.14	72

Conclusions

Though it was not a head to head study , the Veinviewer® may be helpful especially for young children and infants who have difficult intravenous access. A further research is necessary to demonstrate the role of the device in DIVA patients with hemophilia.

