

STUDY OF CENTRAL VENOUS OUTFLOW AMONG PATIENTS WHO REQUIRE ARTERIOVENOUS HEMODIALYSIS ACCESS USING PREOPERATIVE DUPLEX AND INTRAOPERATIVE VENOGRAPHY

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INTRODUCTION

Chronic kidney disease is a category of renal disease where there is gradual deterioration of renal function through time. Firstly, no symptoms occur, then some symptoms might happen like lower limb edema, being exhausted, nausea, vomiting and agitation. Complications include cardiovascular diseases, anaemia, bone diseases and hypertension.

Central veins stenosis or occlusion in chronic HD patients is a critical issue because the central veins are considered the last route of blood flow from the upper limb to the heart. Venous hypertension may present by arm swelling and pain after shunt creation. Ligation of the AVF with the creation of a new AVF will relieve some symptoms.

AIM OF THE WORK

The aim of this work was to study the incidence and characteristics of central venous outflow obstruction among ESRD patients who require primary or secondary or tertiary AV access by using preoperative duplex ultrasound “DUS” and intraoperative central venography in Alexandria Main University Hospital during the period from November 2020 to October 2021.

PATIENTS AND METHODS

PATIENTS: This prospective study will include 50 ESRD patients requiring either primary or secondary or tertiary AV access admitted to Alexandria Main University Hospital during the period from November 2020 to October 2021.

Inclusion criteria:

- ESRD patients requiring AV access.

Exclusion criteria:

- ESRD patients requiring AV access with:

-Congenital or acquired connective tissue disorders (e.g.: SLE, Raynaud’s)

-Cardiac Disorders with Ejection fraction less than 50 %.

-Absolute contraindication for IV contrast Injection (e.g. Allergy).

-Absolute contraindication for radiology exposure (e.g. Pregnancy).

-Peripheral upper limb arterial insufficiency.

METHODS:

I. History taking:

II. Clinical examination:

- Upper limb arterial pulsations (Brachial & Radial &Ulnar).

- Inspection for stigmata of Venous hypertension.

III. Investigations:

- Routine laboratory Investigations.

- Pre -operative AV duplex ultrasound (Pre- shunt assessment):

IV. Intraoperative venography

RESULTS

Table : Agreement (sensitivity, specificity and accuracy) for CVS detection by preoperative duplex compared to venography in each AV access

		Venography				Sensitivity	Specificity	PPV	NPV	Accuracy
		No CVS		CVS						
		No.	%	No.	%					
Primary AV access	Preoperative duplex	(n = 18)		(n = 3)		33.33	100.0	100.0	90.0	90.48
	No CVS	18	100.0	2	66.7					
	CVS	0	0.0	1	33.3					
	χ^2 (^{FE} p)	6.300 (0.143)								
Secondary AV access	Preoperative duplex	(n = 15)		(n = 8)		87.50	100.0	100.0	93.75	95.65
	No CVS	15	100.0	1	12.5					
	CVS	0	0.0	7	87.5					
	χ^2 (^{FE} p)	18.867* (<0.001*)								
Tertiary AV access	Preoperative duplex	(n = 1)		(n = 5)		80.0	100.0	100.0	50.0	83.33
	No CVS	1	100.0	1	20.0					
	CVS	0	0.0	4	80.0					
	χ^2 (^{FE} p)	2.400 (0.333)								
Total sample	Preoperative duplex	(n = 34)		(n = 16)		75.0	100.0	100.0	89.47	92.0
	No CVS	34	100.0	4	25.0					
	CVS	0	0.0	12	75.0					
	χ^2 (^{FE} p)	33.553* (<0.001*)								

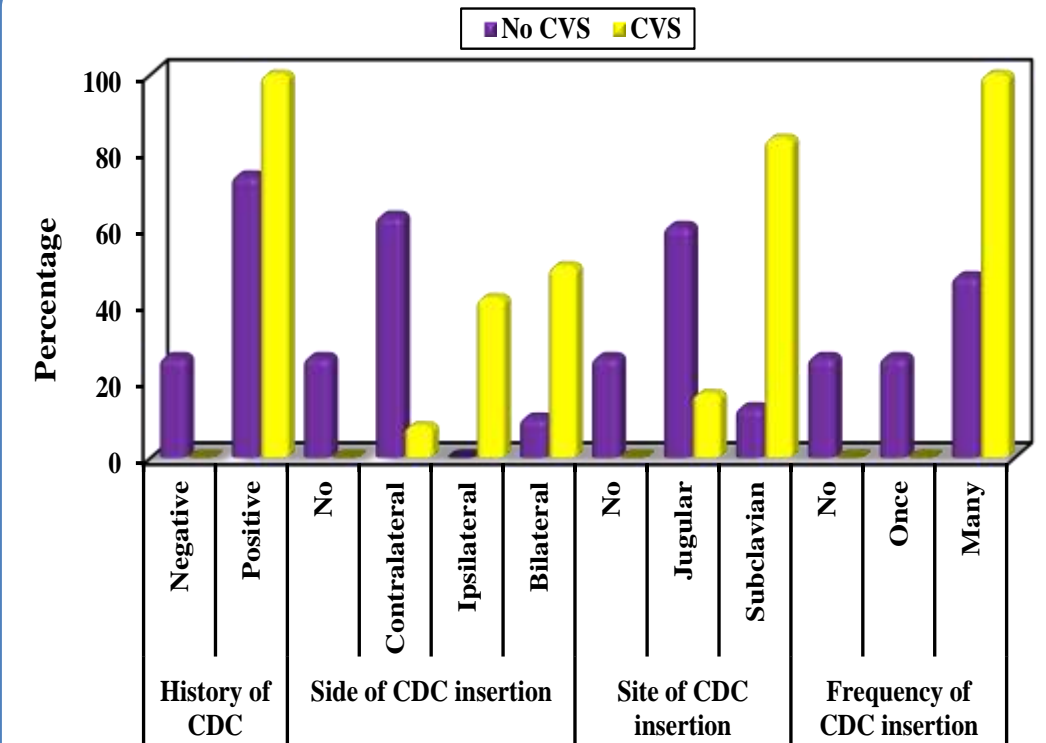


Figure: Relation between CDC insertion with CVS findings by preoperative duplex

CONCLUSION

The results of this study conclude that DUS is a very efficient tool in diagnosis of central venous outflow disorder whether stenosis or occlusion, but has a few fallacies in some cases especially ESRD patients with history of multi access failure or multi CVC insertion, where venography is required as a higher tool for diagnosis of CVOD.