

CHALLENGING THE USE OF COLOR DOPPLER DUPLEX ULTRASOUND IN THE PRESENT ERA – FINDINGS FROM TWO DIFFERENT SCENARIOS IN THE EVERYDAY CLINICAL PRACTICE

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INTRODUCTION AND OBJECTIVES:

Dynamic penile Color Doppler Duplex Ultrasound (CDDU) investigates the vasculogenic characteristics of men with erectile dysfunction (ED).

AIM: To (a) evaluate CDDU parameters suggestive for arteriogenic ED in a contemporary cohort of men without known cardiovascular risk factors (CV); and, (b) characterize CDDU findings at different ages.

METHODS:

Data from 127 patients undergoing dynamic CDDU following the same standardized methodology were analysed.

- Patients were segregated according to the presence of known CV risk factors (CV+ vs. CV-, respectively).
- Descriptive statistics analysed the prevalence of CDDU parameters suggestive for arteriogenic ED in CV- men.
- Descriptive statistics and multivariable logistic regression analysis with local polynomial smoothing models tested the probability of pathological findings at different ages.

RESULTS:

Table 1 – Descriptive statistics of the entire cohort (N. = 127)

	≤ 40 years	40-60 years	≤ 40 Vs 40-60 yrs p-value	60-80 years	≤ 40 Vs 60-80 yrs p-value
Patients [N. (%)]	37 (29.2)	68 (53.5)		22 (17.3)	
Age (years)			<0.001		<0.001
Median (IQR)	33.0 (29.0-36.0)	50.0 (44.0-56.0)		63.5 (62.0-68.0)	
BMI (kg/m ²)			0.02		0.8
Median (IQR)	25.1 (23.0-27.1)	26.4 (24.8-28.7)		24.6 (22.3-27.9)	
Hypertension [N. (%)]			0.003		<0.001
No	36 (97.3)	40 (70.2)		11 (50.0)	
Yes	1 (2.7)	17 (29.8)		11 (50.0)	
Type 1 Diabetes Mellitus [N. (%)]			1		0.6
No	36 (97.3)	54 (96.4)		20 (90.9)	
Yes	1 (2.7)	2 (3.6)		2 (9.1)	
Type 2 Diabetes Mellitus [N. (%)]			0.09		1
No	36 (97.3)	47 (83.9)		22 (100.0)	
Yes	1 (2.7)	9 (16.1)		0 (0.0)	
Smoke [N. (%)]			1		0.5
Never smoked	26 (70.3)	41 (71.9)		18 (81.8)	
Former/active smokers	11 (29.7)	16 (28.1)		4 (18.2)	
Alcohol [N. (%)]			0.9		0.6
Abstainers	11 (29.7)	15 (26.3)		9 (40.9)	
Drinkers	26 (70.3)	42 (73.7)		13 (59.1)	
Hypercholesterolemia [N. (%)]			1		0.6
No	36 (97.3)	55 (96.5)		20 (90.9)	
Yes	1 (2.7)	2 (3.5)		2 (9.1)	
CDDU findings [N. (%)]			0.03		0.2
Normal	24 (64.9)	26 (45.6)		9 (40.9)	
Arteriogenic	3 (8.1)	1 (1.8)		2 (9.1)	
Venogenic	10 (27.0)	30 (52.6)		11 (50.0)	
IIEF-EF [N. (%)]			0.8		0.7
Non ED	1 (3.3)	3 (6.8)		1 (5.6)	
Mild ED	7 (23.3)	8 (18.2)		2 (11.1)	
Mild-to-moderate ED	3 (10.0)	6 (13.6)		1 (5.6)	
Moderate ED	7 (23.3)	7 (15.9)		7 (38.9)	
Severe ED	12 (40.0)	20 (45.5)		7 (38.9)	

Table 2. Descriptive statistics of the whole cohort as segregated according to cardiovascular risk factors status at CDDU

	CV-	CV+	p-value
Patients [N. (%)]	57 (44.8)	70 (55.2)	
Age (yr)			0.005
Median (IQR)	42.0 (34.0-52.0)	53.0 (41.5-60.5)	
BMI			<0.001
Median (IQR)	24.9 (22.8-26.5)	26.4 (24.7-29.6)	
Hypertension [N. (%)]			<0.001
No	57 (100.0)	36 (51.4)	
Yes	0 (0.0)	34 (48.6)	
Type 1 Diabetes Mellitus [N. (%)]			0.06
No	57 (100.0)	63 (91.3)	
Yes	0 (0.0)	6 (8.7)	
Type 2 Diabetes Mellitus [N. (%)]			0.2
No	55 (96.5)	61 (88.4)	
Yes	2 (3.5)	8 (11.6)	
Smoking [N. (%)]			<0.001
Never smoked	57 (100.0)	37 (52.9)	
Former/active smokers	0 (0.0)	33 (47.1)	
Alcohol [N. (%)]			0.2
Abstainers	20 (35.7)	17 (24.3)	
Drinkers	36 (64.3)	53 (75.7)	
Hypercholesterolemia [N. (%)]			0.01
No	57 (100.0)	65 (92.9)	
Yes	0 (0.0)	5 (7.1)	
CDDU findings [N. (%)]			0.5
Normal	31 (54.4)	31 (44.3)	
Arteriogenic	5 (8.8)	6 (8.6)	
Venogenic	21 (36.8)	33 (47.1)	
IIEF-EF [N. (%)]			0.4
Non ED	4 (9.1)	2 (3.6)	
Mild ED	11 (25.0)	8 (14.3)	
Mild-to-moderate ED	3 (6.8)	7 (12.5)	
Moderate ED	8 (18.2)	14 (25.0)	
Severe ED	18 (40.9)	25 (44.6)	

Figure 1. Multivariate logistic regression analysis with local polynomial smoothing method showing the probability of pathological findings at CDDU at different ages (covariates: age, BMI, CCI, hypertension, smoking status).

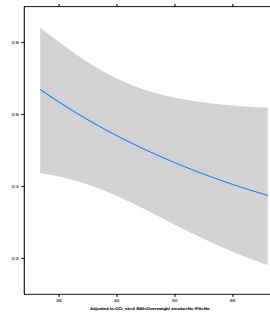


Figure 2. Multivariate logistic regression analysis with local polynomial smoothing method showing the probability of pathological findings at CDDU at different ages stratified by CCI status (covariates: age, BMI, CCI, hypertension, smoking status).

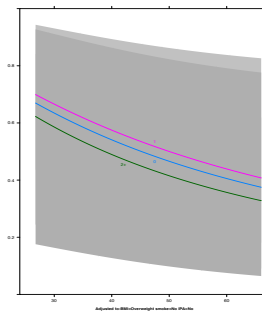
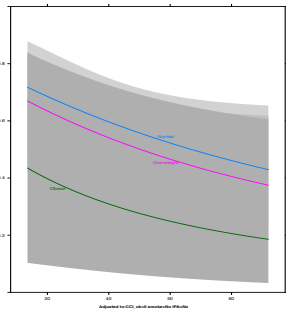


Figure 3. Multivariate logistic regression analysis with local polynomial smoothing method showing the probability of pathological findings at CDDU at different ages stratified by BMI classes (covariates: age, BMI, CCI, hypertension, smoking status).



CONCLUSIONS: Despite the absence of any CV risk factors, a non-negligible proportion of ED men have CDDU suggestive for arteriogenic dysfunction. CDDU parameters were associated with age, comorbidities and obesity. Current findings may be helpful to further personalize the diagnostic work-up of ED patients.