Non invasive evaluation of coronary flow reserve in cardiac syndrome X patients

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Introduction

Patients with chest pain who undergo coronary angiography and have completely normal coronary angiograms constitute up to **30%** of all patients. In this setting, the angina has a heterogeneous entity in clinical and pathophysiological manner .

Cardiovascular syndrome X defines patients with chest pain, positive stress test, typically ST segment depression, and coronary arteries that appear normal in angiography with possible extra cardiac causes of chest pain, coronary spasm, arterial hypertension and ventricular hypertrophy ruled out.(**Kaski et al.., 1995**).

Objective

Evaluation of the coronary flow reserve in cardiac syndrome X patients, (patients with coronary microvascular disease **CMVD**)(patients with chest pain, positive exercise ECG and have normal coronary angiograms) **non invasively** using **TTDE** technique and **MAPSE** marker .

Methods

This prospective study included **90** patients with suspected **CAD, 60 patients with cardiac syndrome X as a (patient group)and 30 patients as a)control group(** referred for treadmill exercise **ECG**, dobutamin stress Echocardiography **DSE** and transthoracic doppler Echocardiography **TTDE.**

This a study included **60 patients** a group patients with **cardiac syndrome X** and a **control** group of **30 individuals**.

Both groups were referred to (**TTDE**) and dobutamin stress echocardiography (**DSE**) in cardiac unit of Zagazig University from January 2017 to March 2019.

TTDE

In this ECHO, use a (transducer) and pressed it firmly against rib and picks up the sound waves "swishing" sound (Doppler) from the heart and its live image is displayed on a TV. Monitor.

for hemodynamic assessment (29.2%) and concern for CV. events (pulmonary embolism, acute coronary syndrome, heart failure, or myocarditis; 45.8%).

Result

Coronary flow velocity reserve **CFVR** Which measured by **TTDE,** that resulted, patient group has *lower* hyperemic CFR than control group .

Treadmill exercise ECG data shows that patient group who have exercise time <6 min, st.segment depression >1.5 mm and post recovery time >6 min are *highly risk* patients with obstructive coronary diseases.

Mitral annular plane systolic excursion MAPSE marker in detection of **CMVD** that resulted,patient group has *lower* .puorg lortnoc naht ESPAM

* The correlation between **CFVR** and contractile reserve is a **linear relation**, as in patient group has lower **CFVR** so,they have also low contractile reserve.

Analysis for parameters affecting CVFR

	Multivariate			
	B	95% CL		p
		LL	UL	
FH of IHD	0.014	-0.176	0.205	0.881
TG	0.000	-0.004	0.003	0.914
BMI	-0.058	-0.093	-0.023	0.002*
Exercise time	-0.030	-0.083	0.023	0.267
ST segment	-0.309	-0.607	-0.011	0.042*
A% MAPSE	0.000	-0.005	0.005	0.885

Phamacotherapy

According to **2019 ESC guidelines,** we should use:
- Statins.
- Nicorandil.
- Aspirin.
- Ivabradine.
- Beta blockers(BBs).
- Ranolazin agents.

- Calcium channel blockers(Non DHP-CCBs).
- Angiotensin-converting enzyme inhibitors (ACEi).
- Nitroglycerin.
- Dihydropyridine.

• Conclusion

- **TTDE** is a good non invasive tool for assessment of **CFVR**.

- **MAPSE** marker is the future trial for assessment of **CMVD**.

- **Medical treatment** is necessary to be used for coronary artery patients.