

VINCULIN GENE EXPRESSION IN A COHORT OF EGYPTIAN PATIENTS WITH HEART FAILURE INDUCED BY ACUTE CORONARY SYNDROME

*Pacint Elsayed Moez, Sherif Wagdy Ayad, * Rasha Mohamed Adel Nassra, ** Raghda Saad Zaghloul Ahmed, Noha Mohamed Noureldin Abdelfattah*

Department of Clinical and Chemical Pathology, Cardiology and Angiology, * Medical Biochemistry, ** Faculty of Medicine University of Alexandria.

Introduction

Heart failure (HF) remains a rising global epidemic with an estimated prevalence of >37.7 million individuals globally. Coronary artery disease is the most common form of heart disease and the most common cause of heart failure. Studying gene expression profile in heart failure could serve as a convenient tool contributing to identifying diagnostic and prognostic markers as well as targets for therapeutic intervention It was suggested that vinculin (VCL), a member of the family of membrane-associated proteins, may affect cardiac repair in heart failure. Vinculin is a force-sensitive protein, regulates cell shape and intracellular signaling. During cardiac stress and failure, there are significant alterations in the expression of cardiomyocyte cytoskeletal proteins, including vinculin. Studies addressing the role of VCL in remodeling after cardiac injury are limited. However, in this study we present an evidence that VCL may be a key player during hypertrophic and ischemic cardiac remodeling.

Aim of the work

The aim of the work was to evaluate Vinculin gene and protein expression in heart failure induced by Acute Coronary Syndrome (ACS).

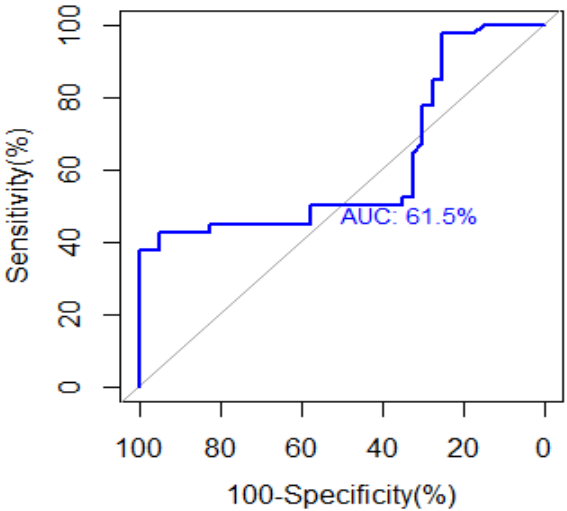
Patients and Methods

Patients: Eighty individuals were categorized into **40 patients** diagnosed as heart failure induced by ACS admitted to Cardiology Department at Alexandria Main University Hospital, and **40 apparently healthy age and sex matched subjects** as a control group.

Methods:

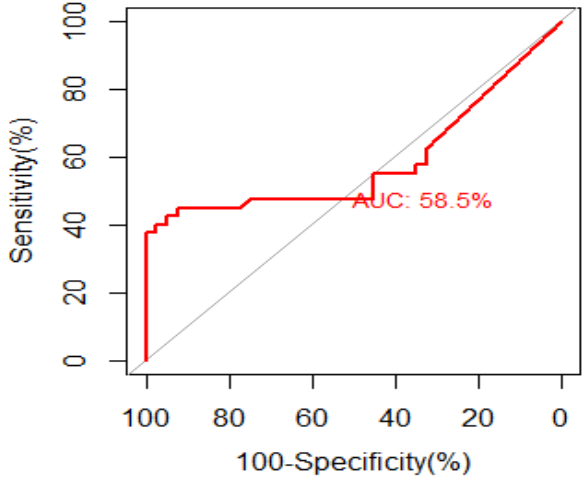
All subjects were subjected to the following investigations: Thorough history taking, complete clinical routine chemical investigations including serum uric acid, blood urea nitrogen (BUN), serum creatinine, serum alanine aminotransferase (ALT), serum aspartate aminotransferase (AST), complete blood count, RNA extraction from peripheral blood mononuclear cells using RNeasy mini kit (Qiagen, USA), relative quantification of *VCL* gene expression using qRT-PCR and quantification of VCL protein using western blotting technique. Heart failure patients were subjected to the following investigations: Echocardiography and ECG.

Results



	AUC	P	95% C. I	Cut off	Sensitivity	Specificity	PPV	NPV	Accuracy
VCL gene	61.5%	0.077	(0.485-0.745)	2.8-3.24	42.5% 37.5%	95% 100%	89.5% 100%	62.3% 61.5%	37.5%

Assessment of *VCL* gene expression value in detection of heart failure



	AUC	P	95% C. I	Cut off	Sensitivity	Specificity	PPV	NPV	Accuracy
VCL protein	58.5%	0.18	(0.454-717)	3.09 ^{e+05} 3.13 ^{e+05} 3.27 ^{e+05} 4.09 ^{e+05}	45% 42.5% 40% 37.5%	92.5% 95% 97.5% 100%	85.7% 89.5% 94% 100%	62.7% 62.3% 61.9% 61.5%	37.5%

Assessment of VCL protein expression value in detection of heart failure

Conclusion

From this study, we concluded that:

- Overexpression of Vinculin is associated with development of HF due to ACS.
- There was strong positive correlation between *VCL* gene and VCL protein in both groups.
- There was no significant difference in the level of VCL Expression in STEMI and NSTEMI heart failure patients.
- There was no statistically significant difference between VCL protein and CK-MB and highly sensitive Troponin.