A Study of Left Ventricular Functionin Cases Of Stable Angina

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Abstracts: Background: Angina is a common initial manifestation of coronary heart disease7and a significant burden in primary care. Early identification of angina is important for the initiation of interventions to reduce the future risk of a more serious cardiac event. The echocardiography useful to assess left ventricular function. It is helpful for early identification of probability of adverse cardiac event Aims: To evaluate diastolic function & systolic function using technique of two dimensional echocardiography. Study Design: A randomized case study Methods: A cross-sectional study consisting of 43 cases of stable angina is undertaken to evaluate echocardiography finding particularly ventricular function. Inclusion criteria: Age: -31-60 years, Patient with hypertension. - Patient with positive treadmill test. Patient with coronary angiography>50% stenosis. Patient with diabetes. Exclusion criteria: patient with history of myocardial infarction, unstable angina -Patient with valvular heart disease.-Patient with chronic obstructive pulmonary disease. - Patient with rheumatic heart disease. - Patient with congenital heart disease. Results: Out of 43 patients of stable angina 39.53% were female and 60.46% were male, prevalence of diastolic dysfunction (79.06%) was more, but there is no association between diastolic and systolic dysfunction. Among diastolic dysfunction grade 1 diastolic function was most common which is 44.18% and systolic function was normal in 67.44%.Conclusion: In cases of stable angina diastolic function is more commonly impaired as compared to systolic function. Among diastolic dysfunction, grade 1 diastolic dysfunction (44.18%) was more prevalent in cases of stable angina. Grade 2 diastolic dysfunction with normal ejection fraction which is poor prognostic indicator was less commonly found (18.6%) of cases. [Shital G NJIRM 2017; 8(1): 41-43]

Key Words: Stable angina, Echocardiography, Diastolic function, systolic function

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Introduction: South Asians in industrialized countries experience higher coronary heart disease mortality compared with native majority White populations, in cross-sectional and prospective studies[1].

Angina is a common initial manifestation of coronary heart diseaseand a significant burden in primary care[1]. Stable angina is an episodic clinical syndrome is due to transient myocardial ischemia.

It is characterized by chest or arm discomfort that may not be described as pain but is reproducibly associated with physical exertion or stress and is relieved within 5–10 minutes by rest and/or sublingual nitroglycerin[2.] Angina is usually crescendo-decrescendo in nature, typically lasts for 2 to 5 min and can radiate to either shoulder and to both arms (especially the ulnar surfaces of the forearm and hand). It also can arise in or radiate to the back, interscapular region, root of the neck, jaw, teeth and epigastrium. The patient with angina is a who complains of episodes of chest discomfort, usually described as heaviness, pressure, and squeezing, smothering or choking and only rarely as frank pain. The history of typical angina pectoris establishes the diagnosis of IHD until proven otherwise[3]. Early identification of angina is an important for the initiation of interventions to reduce the future risk of a more serious cardiac event[1]. Although a normal ECG by no means exclude possibility of coronary artery disease in patients with symptoms consistent with chronic stable angina[4]. omid et al.

The echocardiography useful to assess left ventricular function. It is helpful for early identification of probability of adverse cardiac event, by that way guide the clinician to predict the prognosis.

Aim of study: The purpose of study to evaluate diastolic function & systolic function using technique of two dimensional echocardiography

Methods: A cross-sectional study consisting of 43cases of stable angina is undertaken to evaluate echocardiography finding particularly ventricular function.

Inclusion criteria: Age: - 31-60 years ,Patient with hypertension .- Patient with positive treadmill test.
- Patient with coronar angiography>50% stenosis.
- Patient with diabetes.

Exclusion criteria: patient with history of myocardial infarction, unstable angina -Patient with valvular heart

disease.-Patient with chronicobstructive pulmonary disease. - Patient with rheumatic heart disease. - Patient with congenital heart disease. This study was approved by the institutional ethics committee (IEC) and an informed consent was obtained from the study participants 2D echocardiography (with continuous wave, pulsed wave doppler with color doppler having transducer of 2.5 Mega Hertz frequencies by color doppler ultrasound machine with 2-D Echocardiography Model: Megas GPX installed at Medicine department) was done with respect to following specifications.

- Ventricular function 1) Diastolic function 2) Systolic function. Diastolic function was assessed with following parameters: E/A ratio; Normal: E/A=1-1.5, Grade 1: E/A=0.4-0.9, Grade2: E/A=1.5-2, Grade3: E/A >2. Systolic function was assessed by ejection fraction LVEF (%): Normal >=55, Mild=45-54, Moderate=30-44, Severe<30.

Statistical analysis: Statistical analysis was done by chi square test using Graphpadprism version-5 software. $p<0.05$ was considered as statistically significant.Chi Squre test was applied for association of diastolic and systolic ventricular dysfunction as well prevalence (No. of cases and percentage of cases)of ventricular dysfunction and of grade vice distribution of it were calculated.

Result: Following observations were made from the study of ventricular function in 43 patients of stable angina. Mean age of patients were 52.41± 6.72 years

Table:1 Gender base distribution of cases

Gender	No of cases	% of cases
Female	17	39.53
Male	26	60.46

Table:2 : prevalence and Association of diastolic and systolic dysfunction in patients with stable angina

Ventricular function	No of cases	% of cases	P value
Diastolic dysfunction	34	79.06	0.46 (ns)
Systolic dysfunction	14	32.55	

Table: 2 shows that prevalence of diastolic dysfunction was more, but there is no association between diastolic and systolic dysfunction. Both occur independently

Table-3 Diastolic function in patients with in stable angina group

Diastolic function	Stable angina	
	No of cases (n=43)	% of cases
Normal	09	20.93
Grade 1	19	44.18
Grade 2	08	18.60
Grade 3	07	16.27
E/A Ratio [Normal: E/A=1.5, Grade1:E/A=0.4-0.9, Grade2: E/A=1.5-2, Grade3:E/A>2]		

Table: 3 shows that grade 1 diastolic function was most comman.

Table -4 Systolic function in patients with stable angina group

		Stable Angina	
	LVEF (%) Mean +SD	No of Cases(N=43)	% of Cases
Normal	61.90+5.80	29	67.44
Reduced	29.71+13.72	02	4.65
LVEF (%) Normal>=55, Reduced <55			

Table: 4 shows that systolic function has tendency to remain normal.

Discussion: In the present study, the mean age of the study group was 52.41± 6.72 years. The mean age of the cases was 56.1±9.5 yrs in study conducted by fard and Mohammadi[4].

The present study showed that among ventricular dysfunction diastolic function is more common and there was no association between occurrences of them.

Study of Hassan et al showed that higher percent of ischemic heart disease patients involved in this study developed diastolic dysfunction (73%), Patients who found to have diastolic dysfunction were those with non STEMI (36%), while (31%) were those with chronic stable angina as compared to STEMI (19%) and unstable angina (14%)[5].

LVEF is remained good in majority of cases in our study.The result of this study is consistence with Ohara et al[5] and fard and Mohammadi[4].

Diastolic dysfunction and coronary artery disease (CAD) are interrelated. About half of the heart failure

patients, acute or chronic, have preserved ejection fraction (Normal systolic function)[6].

Conclusion: Despite a decline in mortality attributed to coronary artery disease(CAD), the burden of CAD remains high and is the leading causeof heart failure. Stable Angina is a common initial manifestation of coronary heart disease.

In cases of stable angina diastolic function is more commonly impaired as compared to systolic function .Diastolic dysfunction observed in 79.06% of cases and systolic dysfunction observed only in 32.5% of cases.

Among diastolic dysfunction ,grade 1 diastolic dysfunction (44.18%) is more prevalent in cases of stable angina .According to Ohara And little restrictive filling pattern of diastolic function(grade 2 diastolic dysfunction) remains poor prognostic indicator in CAD with normal ejection fraction ,which is less prevalent in cases of stable angina.
In view of the fact that the present study comprised of a small group of subjects, further studies with more number of patients may be required to evaluate our observations.

References:

1. Zaman M.J.S., Shipley M.J., StaffordM., BrunnerE.J, TimmisE.J., MarmotM.G., HemingwayH.Incidence and prognosis of angina pectoris in South Asians and Whites: 18 years of follow-up over seven phases in the Whitehall-II prospective cohort study.J Public Health (Oxf). 2011 Sep; 33(3): 430–438
2. Goldschmidt-Clermont PJ et al: Atherosclerosis 2005: Recent discoveries and novel hypotheses. Circulation 2005; 112:3348
3. Longo, Fauci, Hauser, Jameson, Loscalzo, ST-Segment Elevation Myocardial Infarction: Harrison's™ principles of internal medicine 18th Edition: The McGraw-Hill 2012:2015-2020
4. FardOmid Hashemi, MohammadiGhodratolah: Evaluation of cardiac systolic function in patients withchronic stable angina and normal resting electrocardiogram. ARYA Atherosclerosis Journal 2009,;4(4): 167-169
5. Hassan Affzan Ezzat, Hanan lauy Sudek, Najeeb Hassan Mohammed Evaluation of left ventricular diastolic dysfunction in Ischemic heart Disease , Department of physiology, college of Medicine, University of Baghdad.
6. Takahiro Ohara and William C. Little, Evolving focus on diastolic dysfunction in patient with coronary artery disease, Cardiology section ,wake Forest university School of Medicine, Winston–salem, North Carolnia, Curr opin Cardiol:2010;25:00

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