

Original Research Article

Medical management and evaluations of stable angina patients in tertiary care centre without invasive treatment

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ABSTRACT

Background: Ischemic heart disease is the important cause of morbidity and mortality in the community, it may present with wide variety of clinical entities. Chronic stable angina is a common condition and results in a considerable burden for both the individual and society. There are two approaches to the management of stable angina - percutaneous coronary intervention (PCI) and optimising medical therapy (OMT). Our study is focused on management of stable angina in tertiary care centre without invasive investigation.

Methods: This study carried out in Medicine Department, SIMS, Shimoga for 7 months from January 2017 to July 2017. 100 patients of chronic Stable Angina attending OPD of Mc Gann Hospital. A detailed history was taken in all the patients and a thorough physical examination was done. ECG, Blood investigations, 2D- Echocardiography and TMT is done.

Results: The mean age was (54.67 ± 8.56) years. With male to female ratio being 1.2:1. ECG was normal in majority of patients (39%), followed by ST, T changes (33%), LVH (35%) and Hemiblock (36%). Hyperlipidemia (48%), Hypertension (42%) and Diabetes mellitus (37%) are major diseases associated with stable angina. Most of the patients are taking clopidogrel (96%) and aspirin (88%). Followed by ACE/ARB's (70%) and statins (72%). Normal 2D-Echo is seen in 82% of cases. Diastolic dysfunction in 69%. Decreased ejection fraction in 23%. TMT is done in only 75 patients out of whom 9 could not complete the test. Inducible ischemia is positive in 48 patients.

Conclusions: Our study showed ECG changes, 2D Echo findings, TMT results and medication usage similar to other studies. However, there is less compliance with medication and risk factors are under controlled. Stable Angina is a common initial manifestation of coronary heart disease. It needs to be treated more aggressively to prevent complications. Increasing education regarding stable angina both among patients and physicians is need of the hour.

Keywords: 2D-Echo, Aspirin, ECG, Coronary angiography, Stable angina

INTRODUCTION

Ischemic heart disease is the important cause of morbidity and mortality in the community, it is important to identify Clinical Features and the complications which occur due to IHD.

Ischemic heart disease may present as a wide variety of clinical entities including unstable or stable angina

pectoris, acute myocardial infarction, and occasionally heart failure. Chronic stable angina is a common condition and results in a considerable burden for both the individual and society.

Stable coronary artery disease (CAD) is defined as an established pattern of angina pectoris, a history of myocardial infarction (MI), or the presence of plaque documented by catheterization.¹

The mortality benefit of lipid lowering treatment and antiplatelet therapy is well proved. However, the evidence base for anti-ischemic therapy is less rigorous, being based mainly on extrapolations from studies of acute coronary syndromes. Angioplasty has been shown to be more effective in relief of symptoms than medical therapy alone, but provides no mortality benefit. Coronary artery bypass surgery, however, has been shown to reduce mortality in patients with severe proximal coronary disease when compared with medical management alone. All patients with stable CAD require medical therapy to alleviate symptoms, prevent cardiovascular events, and reduce mortality. Almost 17 million patients in the United States have stable CAD, and nearly 800,000 more will experience an initial event each year.²

There are two approaches to the management of stable angina - percutaneous coronary intervention (PCI) and optimizing medical therapy (OMT). International and UK guidelines, including the NICE Stable Angina Guidelines,³⁻⁵ state that patients with a confirmed diagnosis of stable angina, who have been deemed to be appropriate for an initial strategy of medical management by a cardiologist following risk stratification, should be first optimized on two antianginal agents for symptomatic relief, prior to consideration for revascularization. PCI confers only a small, temporary symptomatic and quality of life advantage over OMT.^{5,6} And may have no impact in terms of reducing mortality compared with OMT. Griffin et al, demonstrated that clinically appropriate percutaneous management within 12 months was not cost-effective.^{5,7} A meta-analysis found no benefit of PCI over OMT for the prevention of death, nonfatal MI, unplanned revascularization or angina.⁸ Results from this meta-analysis also suggest that 76% of patients with stable coronary artery disease can avoid PCI if treated with medical therapy.⁹

Study of IHD help in development of preventive strategy. The objective of this study is to study the practice pattern in the management of patients with stable angina (SA). Our study is focused on management of stable angina in tertiary care center without invasive investigation (Which is currently not available in our institute) and knowing its usefulness.

METHODS

The study was a prospective study. This study was carried out in Mc Gann Hospital, Shimoga. The material of study consisted of 100 consecutive patients of chronic stable angina attending OPD or admitted to Mc Gann Hospital from January 2017 to July 2017 over 7 months.

Inclusion criteria

Stable Angina diagnosed using Canadian Cardiovascular Society (CCS) classification.¹⁰

Diagnosis was based in presence of at least two of the following three criteria:

Chronic stable angina is characterized as deep, poorly localized chest or arm discomfort that is reproducibly associated with physical exertion or emotional stress and is relieved promptly (i.e., <5min) with rest and or the use of sublingual nitroglycerin (NTG).

- A clinical history of typical Stable anginal pain
- Duration of angina more than 3 months
- Who are already on medications for stable angina.

Exclusion criteria

- Duration less than 3 months
- ECG suggestive of MI or old MI
- Congestive cardiac failure
- Unstable angina.

A detailed history was taken in all the patients and a thorough physical examination was done as per the proforma.

The first electrocardiogram 12 lead (ECG) was recorded. Patients were mentioned for any clinical changes and ECG changes. Standard lead II was used to monitor and record rhythm disturbance. ECGs were recorded on BPL Cardiart 6208 view.

The other investigations to which the patients were subjected are as follows:

- Urine routine analysis (Sugar, Albumin and microscopy)
- Blood routine (Hemoglobin percentage, Total count, differential count, Erythrocyte sedimentation rate)
- Random blood sugar (Fasting blood sugar/Post prandial blood sugar was done whenever necessary), blood urea, serum creatinine
- Lipid profile.

Special investigations

- Exercise stress test (TMT)
- Echocardiography (2D)
- Cardiac enzymes
- Chest X-ray / screening (whenever required)
- Serum electrolytes (whenever required).

RESULTS

Age distribution

The age of patients in this study ranged from 25 years to 89 years.

Mean age (54.67±8.56) years. Maximum number of patients is in age group 51-60 years i.e 38%. Followed by

41-50 years i.e 23%. Least number of cases in less than 30years and more than 81-year group. Youngest person is 26 years and oldest person is 89years.

Table 1: Age distribution.

Age group (in years)	No. of patients	Percentage
Less than 30	1	1
31-40	8	8
41-50	23	23
51-60	38	38
61-70	18	18
71-80	8	8
More than 81	4	4
Total	100	100

Sex distribution

The male to female ratio was 1.2:1. More number of males are affected by IHD in our study compared to females.

Table 2: Sex distribution.

Sex	No. of patients	Percentage
Male	61	61
Female	39	39

ECG was normal in majority of patients (39%), 35% showed some or other ST, T changes such as ST depression, T wave inversion, ST elevation is less commonly seen (5%). LVH particularly associated with hypertension and Hemiblock may be isolated finding or associated with ST T changes and hypertension.

Table 3: ECG changes.

Site of Infraction	No. of cases	Percentage
Normal	39	39
T wave inversion	35	35
ST depression	33	33
LBBB	7	7
Heart block	4	4
ST elevation <2mm	27	27
Left ventricular hypertrophy	35	35
Hemiblock	36	36
Atrial/ventricular ectopics	16	16

Hyperlipidemia, hypertension and diabetes mellitus are major diseases associated with stable angina. Hyperlipidemia is most common, isolated hypercholesterolemia is seen only in 8% of patients but most of the patient had associated hypertension and diabetes mellitus. All peripheral vascular disease (PVD) is associated with smoking. All COPD is associated with smoking.

Table 4: Risk factor for angina.

Risk factors	No. of cases	Percentage
History of DM	37	37
History of hyperlipidemia	48	48
History of hypertension	42	42
History of PVD	4	4
History of TIA or stroke	7	7
History of smoking	22	22
History of COPD	9	9
Premature CAD in first degree relative	16	16
obesity	25	25

Table 5: Medications used.

Medications	No. of patients	Percentage
Aspirin	88	88
Clopidogrel	96	96
Betablockers	66	66
ACE/Angiotensin receptor blockers	70	70
Statins	72	72
Nitrates	45	45
Diuretics	18	18
Calcium channel blocker	22	22

Most of the patients are taking clopidogrel and aspirin. Followed by ACE/ARB's and statins. Only 4% of total patients had not taken clopidogrel due allergic manifestations. Only 88% of patients took aspirin due acidity problem. Betablockers are also taken by only 66% due to presence of diabetes and bronchial asthma. Statin use is restricted (72%) due to myalgia, arthritis and elevated liver enzymes.

Table 6: 2D Echo investigations.

2D Echo	Finding	Percentage
RWMA	Absent	82
	Present	18
EF	>50	77
	49-40	21
	<40	2
Diastolic dysfunction	Present	69
	Absent	31

Normal 2D-Echo is seen in 82% of cases. Commonest abnormality is Diastolic dysfunction seen in 69% usually grade 1 and 2. Only 8% had grade 4 dysfunction. Most of them had normal ejection fraction (77%), Decreased ejection fraction (<50%) is seen in 23%.

TMT is done in only 75 patients out of whom 9 could not complete the test. Inducible ischemia is seen in 48 patients. Many patients could not do TMT or complete

TMT due to orthopedic problems such as Arthritis low back ache. Only 5% had strongly positive TMT test.

Table 7: TMT investigation.

TMT	Numbers	Percentage
Positive	48	64
Negative	18	24
Non-conclusive	9	12

DISCUSSION

The observations made in 100 cases of chronic Stable Angina attending OPD or admitted to the Mc Gann Hospital Shimoga from January 2017 to July 2017 is discussed here and the results have been compared with other studies.

Age

The age of patients in this study ranged from 25 years to 89 years with maximum number of patients in the age group 51 to 60 years (38%). Mean age (54.67 ± 8.56) years. This is consistent with findings of Pahlajani D et al, where mean age was 57.0 ± 10.5 years.¹¹ In study by Ghataliya S et al, the mean age of patients was 52.41 ± 6.72 years.¹²

18% of the patients were aged below 44 years. This is comparable with study of Koju R et al who had quoted an incidence of 15.6%.¹³

Prevalence increased with age, but it was lower in the oldest patients (>70 years) i.e. 12%. This could be explained by lower survival of patients with ischemic heart disease or death by other means and the greater limitation of activity due to age-related comorbidity

Sex

There were 61 males (61%) and 39 females (39%) in the present study. The male to female ratio was 1.2:1. This finding is consistent with that of Pahlajani D et al - males (62%), females (38%); E.G. Nesukay - 67% male, 33% female.^{11,14}

Table 8: ECG changes.

Site of infraction (Percentage)	Our study	Pahlajani D et al ¹¹
Normal	39	42.8
T wave inversion	35	14.3
ST depression	33	38.1
LBBB	7	-
Heart block	4	-
ST elevation <2mm	27	4.1
Left ventricular hypertrophy	35	-
Hemiblock	36	-
Atrial/ventricular ectopics	16	-

Normal ECG is seen in 39% which is comparable to study done by Pahlajani D et al.¹¹ ST, T changes, LVH and hemiblock are other common findings.

Table 9: Risk factor for angina.

Risk factors (percentage)	Present study	Pahlajani D et al ¹¹	Nesukay EG ¹⁴	Joaquín J et al ¹⁵	Carasso S et al ¹⁶	Daly C et al ¹⁷
History of DM	37	39.7	22.9	12.2	25	17.8
History of hyperlipidemia	48	46.8	84	25.3	70	58.1
History of hypertension	42	69.2	82	45.3	40	61.7
History of PVD	4	4.1	-	2.4	-	7.1
History of TIA or stroke	7	4.7	-	3.8	-	5.2
History of smoking	22	39.9	-	22.2	25	53
History of COPD	9	5.3	-	6.3	-	-
Premature CAD in first degree relative	16	21.1	-	-	-	-
obesity	25	-	35	33.7	-	-

Hyperlipidemia, hypertension and diabetes mellitus are seen in 48%, 42% and 37% respectively. Which is comparable to study done by Dev Pahlajani et al, Joaquín J et al and Carasso S et al.^{11,15,16}

Majority of stable angina patient had multiple risk factors as shown in our study similar to many other studies done worldwide.

Most of the patients are taking clopidogrel and aspirin which is comparable to study done by Pahlajani D et al and Petty D et al.^{9,11} Most of these drug intakes are comparable to other studies shown above.

Despite patients on statins more number of patients are having dyslipidemia in our study indicating less dietary control and low dosing of statins. Most patients are having Blood pressure in the upper limit (>140/90) indicating lack of compliance in medications. Diabetes

mellitus is also under controlled due to lack of dietary control. Most of these patients need more aggressive treatment to avoid severe outcomes from further disease progression.

Many patients showed decreased compliance with aspirin use due to gastritis problem. Normal 2D-Echo is seen in 82% of cases which is comparable to study done by Dev Pahlajani et al.¹¹

Table 10: Medications used.

Medications (percentage)	Present study	Carasso S et al ¹⁶	Daly C et al ¹⁷	Petty D et al ⁹	Pahlajani D et al ¹¹
Aspirin	88	97	78		88.3
Clopidogrel	96	-	80	95	
Betablockers	66	71.3	67	68	70.3
ACE inhibitor/ARB	70	-	-	72	66.1
Statins	72	-	48	85	86.1
Nitrates	45	24.6	-	45	45.7
Diuretics	18	-	-	-	19.6
Calcium channel blocker	22	33	-	39	

Table 11: 2D Echo investigations.

2D Echo	Finding	In our study	Pahlajani D et al ¹¹	Ghataliya S et al ¹²
RWMA	Absent	82	76.9	
	Present	18	23.1	
EF	>50	77	74.2	67.44
	40-50	21	22.2	
	<40	2	3.6	4.65
Diastolic dysfunction	Present	69		79.06
	Absent	31		20.94

Table 12: TMT investigation done only in 75 patients.

TMT	In our study	Pahlajani D et al ¹¹
Positive	64	76.8
Negative	24	18.7
Non-conclusive	12	4.5

TMT is done in only 75 patients 64% had positive test.

The prevalence of stable angina is difficult to establish because its diagnosis is eminently clinical and complex.¹⁸ However, it is seen quite commonly in our study.

The extent to which these patients are investigated noninvasively and treated pharmacologically is a public health and economic issue.

Most of these patients are on less regular follow-up and getting tests done less frequently.

Large international surveys have shown that lower and middle-income countries such as India have lower rates of evidence-based medication use to reduce deaths from cardiovascular disease and associated risk factors.^{19,20} However our study showed medication use is similar to other western studies.

Medicines optimization is very important in treating SA patients and helps in improving their outcomes.

Even though most patients are referred for further evaluation CAG (coronary angiography), only 37% went for CAG due to financial and social reasons, many patients are lost to follow-up. Most of the patient who underwent coronary angiography had single or multiple lesions in coronary and had undergone either angioplasty or coronary by-pass surgery. Therapeutic advances and more aggressive management strategies of stable angina will help in decreasing cardiac events.

The limitations of this study were diagnosis of stable angina is not standardized, and practices may have varied across sites, regions, and consulting physicians. One of the major limitations of this study is the small sample size. Moreover, the evaluation of coronary lesion was also limited. Further studies with higher number of individuals and more elaborated evaluation are required to identify the pattern of coronary artery problems in patients undergoing coronary angiography.

CONCLUSION

Simple risk-stratification techniques to identify high-risk patients and adequate counselling of patients to motivate

them to undergo complete investigation are keys to better management of SA patients. The goal of such investigation should be to determine whether patients may benefit from revascularization and if so, provide them with the option of undergoing the appropriate revascularization procedure. Despite a decline in mortality attributed to coronary artery disease (CAD), the burden of CAD remains high and is the leading cause of death. Stable Angina is a common initial manifestation of coronary heart disease. It needs to be treated more aggressively to prevent complications. Increasing education regarding stable angina both among patients and physicians is need of the hour.

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