International Journal of Life Sciences, Biotechnology and Pharma Research Vol. 14, No. 3, March 2025 Online ISSN: 2250-3137
Print ISSN: 2977-0122

DOI: 10.69605/ijlbpr_14.3.2025.179

ORIGINAL RESEARCH

Clinical profile of patients with proven coronary artery disease admitted/complicated with other concomitant cardiovascular disease

[1]Dr. Ravi Chandra Basavaraj Jaraganahalli, [2]Dr. Amar B R, [3]Dr. Bhanuprakash Malleshappa Hiriyur

[1]Assistant Professor, Department of Surgery (CTVS), Siddaganga Medical College and Research Institute, Bengaluru Honnavar Highway, Tumkur, Karnataka, India
[2]Assistant Professor, Department of Neurology, Siddaganga Medical College and Research Institute, Siddaganga Medical College and Research Institute, Bengaluru Honnavar Highway, Tumkur, Karnataka, India
[3]Assistant Professor, Department of Cardiology, Siddaganga Medical College and Research Institute, Bengaluru Honnavar Highway, Tumkur, Karnataka, India

Corresponding Author
Dr. Bhanuprakash Malleshappa Hiriyur
Assistant Professor, Department of Cardiology, Siddaganga Medical College and Research Institute, Bengaluru Honnavar Highway, Tumkur, Karnataka, India

Received: 22 Jan, 2025 Accepted: 23 Feb, 2025

ABSTRACT
Lower extremity peripheral arterial disease (PAD) is common among older men and women. The frequency of intermittent claudication increases with age from 0 to 6 percent in people aged 45 to 54 years to about 9 percent in patients aged 65 to 74 years. Patients with known arteriosclerotic coronary, carotid, or renal artery disease are likely to have concomitant lower extremity PAD. This study includes patients who were admitted with symptomatic non coronary disorder and on further work up, they were found to have coronary artery disease. These include patients with carotid stenosis, patients with valvular heart disease and patients with lower limb ischemia. On admission the vital data of the patients were recorded in accordance with the patient proforma. History was recorded, clinical examination findings charted. Majority of the patients (84%) had lower limb vascular involvement along with coronary artery disease. Almost half of the patients in this series had good LV function and about one third had mild to moderate dysfunction. 20% had severe LV dysfunction.
Key words: Coronary artery disease, concomitant cardiovascular disease, peripheral arterial disease

INTRODUCTION

Patients with coronary artery disease can exhibit substantial vascular involvement, and patients with vascular disease have a high incidence of coronary disease [1].

Genetic aspects of diabetes, diabetic macro vascular complications, and CAD are assumed to have intersections leading to the common effector hypothesis. However, only a few genetic risk factors could be identified that modulate the risk for both conditions. Polymorphisms in TCF7L2 and near the CDKN2A/B genes seem to be of great importance in this regard since they appear to modulate both conditions, and they are not necessarily related to insulinism, or hyperglycemia, for CAD development.

The association between coronary artery disease and non-coronary atherosclerosis is explained by cardiovascular risk factors [2].

Lower extremity peripheral arterial disease (PAD) is common among older men and women. The frequency of intermittent claudication increases with age from 0 to 6 percent in people aged 45 to 54 years to about 9 percent in patients aged 65 to 74 years.

Patients with known arteriosclerotic coronary, carotid, or renal artery disease are likely to have concomitant lower extremity PAD.

At ages up to 69 years, risk factors are age plus diabetes, smoking, dyslipidemia, hypertension or hyperhomocysteinemia.

Some experts consider elevations of C-reactive protein a risk factor [3].

DOI: 10.69605/ijlbpr_14.3.2025.179

After age 70, age alone is a risk factor for lower extremity PAD, which is equally prevalent in older men and women.

Individuals with PAD have approximately equal relative risk of death from cardiovascular causes as patients with coronary or cerebrovascular disease.

Large majority of patients with combined coronary and carotid disease live for more than 5 years.

Therefore prophylactic carotid endarterectomy should be considered even in asymptomatic patients to prevent stroke.

The degree of internal carotid artery (ICA) stenosis is related to the extent of CAD.

Severe, but not Moderate, Carotid Atherosclerosis may predict concomitant vascular disease in other arterial beds.

Increase in CIMT (carotid intima-media thickness) by carotid Doppler Ultrasound Examination is associated with the presence and extent of CAD [4].

METHODOLOGY

This is a prospective study of patients with proven coronary artery disease detected on work up for surgery along with significant non coronary cardiovascular diseases.

INCLUSION CRITERIA

1. Patients with proven coronary artery disease admitted/complicated with other concomitant cardiovascular disease.
2. Patients detected to have coronary artery disease on work up of non-coronary presentation.

EXCLUSION CRITERIA

Patients without any coronary artery involvement.

This study includes patients who were admitted with symptomatic non coronary disorder and on further work up, they were found to have coronary artery disease. These include patients with carotid stenosis, patients with valvular heart disease and patients with lower limb ischemia.

On admission the vital data of the patients were recorded in accordance with the patient proforma. History was recorded, clinical examination findings charted.

Pre operatively these patients had recording of blood sugar and blood pressure and entries made in the patient proforma data sheet and measures were taken for the control.

Biochemical investigations were done including electrolytes and blood gases. Lipid profile was part of the work up.

Those patients with carotid disease had 4 vessel neck angiogram and coronary angiogram along with routine pre-operative investigations. Those patients detected to have coronary disease were included in the study and planned for surgical procedure. They underwent concomitant surgery or had surgery for the carotid lesion with further intervention of coronary lesion reserved for a later date.

These patients underwent carotid endarterectomy alone or combination of carotid endarterectomy with coronary artery bypass surgery.

During carotid endarterectomy, strict monitoring of intra operative blood pressure was vital for the procedure. In case of combined cabg, the patients had saphenous vein conduit and procedure was performed on cardio pulmonary bypass.

In the post-operative period, again control of blood pressure was critical for the success of the surgery. The intra operative hemodynamic parameters were recorded.

Immediate and long term complications were recorded with regular follow up of these patients.

Such patients who had valvular lesions had detailed recording of the presenting complaints and examination findings and these were analyzed.

Among these, patients who were of age more than 45 years underwent coronary angiogram as part of work up for cardiac anatomical and functional status. Those patients who had coronary artery disease were included in this study and further work up including biochemical investigations were done.

These patients had planned procedure for the valvular lesion along with coronary revascularization. Intra operative blood gases, electrolytes were monitored and recorded.

In the post-operative period, the duration of mechanical ventilation and inotropic support requirements were recorded. Charting of drain output was recorded during their stay in the intensive care unit.

Regular wound dressings were done and follow up examination findings were recorded.

Patients who presented with lower limb ischemia had, along with recording of detailed history and clinical examination findings, coronary angiogram in those aged 45 years or more. There were also patients with proven coronary and lower limb disease.

These patients were counseled regarding the vascular and coronary condition and explained in detail the proposed vascular procedure for the lower limb in view of the symptomatology and physical findings.

Among the procedures performed, all patients had monitoring of blood pressure, sugar levels and inotropic or vasodilator requirements.

During the post-operative period, recordings were made regarding blood gases, electrolytes, ECG changes, any symptoms or signs suggestive of myocardial infarction. Strict charting of drain output were done and they were recorded.

RESULTS

There were 89 patients who satisfied the inclusion criteria of this study.

DOI: 10.69605/ijlbpr_14.3.2025.179

Table 1: Age Wise Distribution

Age in years	No of Patients	Percentage
31 to 40	08	8.98
41 to 50	15	16.85
51 to 60	27	30.33
61 to 70	30	33.70
71 to 80	09	10.11

The youngest patient was a 38 yrs lady who presented with aorto biiliac disease 2 years after undergoing CABG.

The oldest patient was 78 years old with symptomatic aortoiliac disease.

The most common age group was 61 to 70 years.

Table 2: Sex Distribution

Sex	No of Patients	Percentage
Male	71	79.77
Female	18	20.22

Majority of the patients were of male gender (80%).

Table 3: Associated Lesions

Type of associated lesion	No of patients	Percentage
Carotid artery stenosis	10	11.23
Lower limb involvement	75	84.26
Valvular involvement	4	04.49

Majority of the patients (84%) had lower limb vascular involvement along with coronary artery disease.

Table 4: The Comorbid Factors Associated with These Patients

Comorbid Factors	No of Patients	Percentage
Diabetes	61	68.53
Hypertension	53	59.55
Smoking	40	44.94
Hyperlipidemia	31	34.83
COPD	20	22.47

Table 5: Cardiac Symptomatology and Pattern of Coronary Artery Disease

NYHA Class	Single Vessel Disease	Double Vessel Disease	Triple Vessel Disease	Left Main Stenosis
I 47	08	09	25	03
II 28	12	06	08	02
III 12	04	02	06	02
IV 02	-	-	02	-
Total	24	17	41	07

80% of the patients had NYHA Class I & II symptoms.

Table 6: Ischemia Grade

Ischemia grade	Aorto iliac	Iliaco femoral	Femoropopliteal	Total
II-B	09	05	02	16
III	15	10	04	29
IV	12	08	10	30
Total	**36**	**23**	**16**	**75**

IIB-Pain after walking <50 meters.
III-Resting pain.
IV-Ischemic skin lesion.

DOI: 10.69605/ijlbpr_14.3.2025.179

Among patients with lower limb involvement 80% had incapacitating resting pain or ischemic skin lesion with variable extent.

Table 7: Ejection Fraction

Ejection Fraction	Number	Percentage
>40	44	49.43
20-40	27	30.33
< 20	18	20.22

-14-

Almost half of the patients in this series had good LV function and about one third had mild to moderate dysfunction. 20% had severe LV dysfunction.

Table 8: ECG Changes

ECG Changes	Number	Percentage
Poor R Wave Progression	38	42.69
Normal pattern R Wave	51	57.30

Table 9: Pulmonary Function Test

	Number	Percent
Obstructive	65	73.03
Restrictive	17	19.10
Mixed	07	07.86

Almost 3/4th of the patients had obstructive type of lesion. These patients had adequate pre-operative preparation for surgery with bronchodilators and chest physiotherapy.

DISCUSSION

In this study 89 patients with known coronary artery disease along with other cardiovascular disease were included and critically analysed and the observations recorded.

The age range was between 38 and 75 years. The most common age group was between 61 and 70 years. Majority of the patients were males amounting to 71 patients. There were 18 female patients included in this study. This age and gender group is similar to the presentation in isolated coronary artery disease and isolated peripheral vascular disease [5].

Among these patients, 75(84%) had lower limb ischemia and underwent revascularization. 10 patients (12.5%) had concomitant carotid artery disease, 4 patients (10%) had associated valvular lesion.

Diabetes mellitus was a major comorbid factor associated with 61 (65%) of the patients. Most of the patients had uncontrolled diabetes at the time of initial presentation. Hypertension was another comorbid factor present in 53(57%) of them despite patients being on anti-hypertensive medication [6].

40(44%) of the male patients had the habit of smoking and none of the female patients had any history of smoking. These patients underwent adequate counseling for cessation of smoking.

During the pre-operative preparation of the patients, the following protocol was observed.

In case of patients with already proven coronary disease, they were started on Beta blockers, ACE inhibitors, Statins. Antiplatelet medication was discontinued at least 5 days prior to surgery in order to minimize the risk of intra op and post op bleeding. Patients who had ongoing symptoms of coronary disease were started on heparin regimen of 100 units per kg per dose three times a day. Patients with altered renal function had optimization and normalization of RFT with diuretic therapy and fluid management as advised by the nephrologist [7].

During work up of patients who did not have proven coronary artery disease, all patients above the age of 45 years and presenting with a cardio vascular disease underwent conventional coronary angiogram and those found to have coronary artery involvement were included in this study and planned for further work up and management [8].

CONCLUSION

1. Patients with coronary artery disease have significant associated cardiovascular disease. The current literature suggests it to be between 10 and 15 percent. In our institute we found this incidence to be 17%.
2. The incidence of lower limb PVD in patients with coronary artery disease was 84.27% and carotid disease was 11.24% in our series.
3. Among the patients of lower limb PVD, the incidence was 33% for aorto bi iliac, 34% for aorto iliac and remaining had isolated below inguinal region, among which 21% was unilateral and remaining was bilateral.
4. Majority of patients (30%) had moderate ejection fraction on 2D echo, which shows late stage of presentation in Indian population or patients with severe peripheral vascular disease may not be symptomatic due to less physical activity.

DOI: 10.69605/ijlbpr_14.3.2025.179

REFERENCES

1. Simultaneous revascularization for critical coronary and peripheral vascular ischemia. Ann Thorac Surg 1991;52:805-809
2. Combined carotid endarterectomy and coronary artery bypass grafting in patients with asymptomatic high-grade stenosis and analysis of 758 procedure. Byrne J, J Vase Surg. 2006 Jul;44(1):67-72
3. Association between genetics of diabetes, coronary artery disease and macro vascular complications: exploring a common ground hypothesis. Souse AG, Rev Diabet Stud. 2011 Summer, 8(2):230-44. Epub 2011 Aug 2010.
4. Relation between central and peripheral atherosclerosis and left ventricular dysfunction in a community population. Connie W Tsao, Vasc Med Aug 2011 vol. 16 no 4 253-259.
5. Cardiovascular surgery, vol. 10 no 2, pp 111-120 2002
6. Kosmas I. Paraskevas, MD, FASA. Stroke. 2010: 41: e597 Published online before print September 30, 2010.
7. Wake-up test after carotid endarterectomy for combined carotid coronary artery surgery: a case series. Turkoz A *et al*. J Cardiothoracic Ask Anesth. 2007 Aug;21(4):540-6. Epub 2007 Jan 25.
8. Relationship between carotid intima-media thickness and coronary angiographic findings: a prospective study. Ugur Coskun *et al*. Cardiovascular Ultrasound. 2003;7:59.