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CORRELATION OF CAROTID ARTERY INTIMA MEDIA THICKNESS WITH CORONARY ARTERY DISEASE

Radiodiagnosis

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ABSTRACT

Introduction: Cardiovascular diseases generally go undiagnosed before the onset of symptoms andtherefore thereis a need for modalitie sthat are reliable, cost-effective, easy to perform, with minimal limitation sand that canact as earlyindicators of Coronary Artery Disease. In recent years, a multitude of studies have focused on Carotid Artery Intima Media Thickness (CAIMT) as an earlypredictor of Coronary Artery Disease (CAD). This studyaims to find the co-relation between CAIMT and CAD.

Materials and Methods: This observational prospectivestudy includes all adult patients diagnosed with Coronary Artery Disease on catheter angiography , after taking a written informed consent from the patient ,they were included in the study.

Results : Total out of 50 patientsMean CIMT >0.902mm was indicated to coronary artery disease with sensitivity of 75.0%, specificity of 83.3% and accuracy was 80.7%.

Conclusion: Increased carotid intima media thickness is a marker for coronary artery disease. It may haveconsiderable importance as a screening tool for coronary artery disease and may improve risk stratification.

KEYWORDS

Carotid Artery Intima Media Thickness, Coronary Angiogram, Coronary Artery Disease, Ultrasound

INTRODUCTION

Cardiovascular disease is the number one killer disease worldwide as well as in India. According to a WHO survey, in India 24.8% people die annually due to various cardiovascular diseases, among which coronary artery disease (CAD) being the leading cause. Atherosclerosis is thought to play a key role in the pathogenesis of CAD[1].The offspring of patients with CAD are at increased risk for atherosclerosis. The reported risk in first degree relatives ranges from 1.5-7%[2] Recent research suggests that asymptomatic subjects with zero coronary artery calcium score and a positive family history of CAD are at increased risk for cardiovascular events compared with those without a family history of CAD[3].

Coronary Artery Disease can present with a myriad of symptoms such as angina which is seen in 50%of those diagnosed with obstructive CAD[4] amongst others such as fatigue with minimal exertion, palpitations,epigastric discomfort which are all labelled as 'anginal equivalents'. However, these symptoms are poorlylinked to CAD as they are not only non-specific but might manifest only after significant narrowing of thevessels has occurred. However, in addition to theincreased cost, Coronary Angiography is associated with complications such as infection, local vascular injury,myocardial infarction, stroke , complications related to the contrast material used or to the anesthesia and insome cases even death[5] For these aforementioned reasons, in cases of suspected CAD that are stable andpresenting with angina or other symptoms suggestive of ischemic heart disease and not experiencing any acutecoronary events, are subjected to non-invasive modalities initially[6]

In1986, Pignoli et al [6]reported using ultrasound to measure the Carotid Artery Intima MediaThickness. In 1991, Salonen et al[2] demonstrated the use of intima media thickness in the detection of atherosclerotic changes in the carotid arteries. CAIMT has since been the focal point in a multitude of studies asit is a relatively inexpensive, reliable and a non-invasive parameter that can be used in the detection of*Co-relationof Carotid Artery Intima Media Thickness withCoronary Artery Disease*

Increased media thickness has also been associated with myocardial infarction, theCAIMT measurement may prove to be an invaluable tool.Keeping the above information in mind, this current study aims to determine the relation, if any,between Carotid Artery Intima Media Thickness and Coronary Artery Disease[7].

MATERIAL & METHODS

Inclusion criteria:

1. Diagnosed patients with coronary artery disease using catheter coronary angiography.

Exclusion criteria:

1. Patient who were not willing for inclusion in the study.
2. Patient below 30 years of either sex.

METHODS OF COLLECTION OF DATA

- All patients with pre diagnosed coronary artery disease by angiography and above the age of 30years of both sexes were taken into consideration in the study.
- The cases which were subjected to the present study were patients admitted in the hospital either as inpatients or presenting as outpatients to the departments of Medicine . The study include both male and female patients.
- The ultrasound examination of intima media of both carotid arterieswere performed using USG B mode.The 0.9mm thickness of intima media was taken as cutoff for normal thickness.
- Ultrasonography with B-mode was done on Ultrasound machine of Siemens Acuson X 300 having Grey Scale display with capability of color Doppler with a linear array transducer with a centre frequency of 7.5 MHz (range, 2.0–09.0 MHz).

RESULT

The present study was conducted in the Department of Radiodiagnosis, Shri Ram Murti Smarak Institute of Medical Sciences, Bareilly, Uttar Pradesh in 50 patients presenting with Catheter angiography diagnosed coronary artery disease.

Below table shows the distribution of studied patients on the basis of cardiovascular risk factors according to the Intima-Media Thickness (IMT) in which shows the association between risk factors and carotid artery intima media thickness where it was seen that patients with mean CIMT >0.9mm were more prone to Hypertension with DM (42.0%).

The below shows the distribution of studied patients on the basis of their age, out of a total 50 the majority of patients 22(44.0%) were in the age range 61-80 years, followed by 21 (42.0%)were in the age category of 41-60 years, and 5 (10.0%)were in the age range of ≤40years,while the rest of the patients 2(4.0%) were in age range >80. The mean age was 49.66±12.17and range was (35-95) years.

Table No. 1 Distribution of patients on the basis of age

Age (year)	Frequency (N=50)	Percentage (%)
≤40	5	10.0%
41-60	21	42.0%
61-80	22	44.0%
>80	2	4.0%
Mean±SD	49.66±12.17(35-95)	

Below table showing the distribution of patients on the basis of Gender in which male patients 37(74.0%) were dominating over female patients 13(26.0%).

Table no. 2 Distribution of patients on the basis of Gender.

Gender	Frequency (N=50)	Percentage
Male	37	74.0%
Female	13	26.0%

Below table showing the laboratory examination of the study patients such as bloopd pressure, Haemoglobin, Total Leukocyte Count, Blood Sugar, Creatinine, HbA1c, etc.

Table no. 3 Distribution of patients on the basis of laboratory examination.

Laboratory examination		Mean±SD	Range	
			Max.	Min.
Blood pressure(mmHg)	Systolic	152.72±20.02	210	96
	Diastolic	89.72±10.54	110	66
HB(gm/dl)		10.62±2.73	14.7	7
TLC		7458±3547.81	15000	5200
Blood Sugar		225.6±131.77	450	100
HbA1c		7.59±0.63	9	6.5
Serum Creatinine		3.4±2.33	7.1	1

Below table showing thedistribution of patients on the basis of clinical evaluation majority of patients of CAD 39(78%) were stable followed by CAD with MI 7(14.0%) and CAD with LVF 2(4.0%), the least one CAD with involving RCA dominant 1(2.0%) found in the patients.

Table No. 4 Distribution of patients on the basis of clinical evaluation.

Clinical Evaluation	Frequency N=50	Percentage (%)
CAD	39	78.0%
CAD WITH MI	7	14.0%
CAD WITH LVF	2	4.0%
CAD WITH RCA INVOLVEMENT	2	4.0%

Below the table showingdistribution of patients on the basis of risk factors in which the majority of patients in hypertension 39 (78.0%) followed by DM 29 (58.0%), smoking 10 (20.0%) while the least CKD 6 (12.0%).

Table No.5 Distribution of patients on the basis of risk factors

Risk factor		Frequency(N=50)	Percentage
Hypertension	Normal	11	22.0%
	Hypertension	39	78.0%
DM	Normal	21	42.0%
	DM	29	58.0%
Smoking	Normal	40	80.0%
	Smoking	10	20.0%
CKD	Normal	44	88.0%
	CKD	6	12.0%

The below shows the distribution of studied patients on the basis of their average CIMT, out of a total 50 the majority of patients 34 (68.0%)were in the average CIMT range >0.9, followed by 16 (32.0%)were in the range category ≤0.9,

Table No. 6: Distribution of patients on the basis of their average CIMT

Average CIMT	Frequency(N=50)	Percentage%
≤0.9	16	(32.0%)
>0.9	34	(68.0%)
CIMT Mean±SD	0.97±0.18 (Range 0.59-1.47mm)	

The following table shows the mean of Left and right CIMT parameters in the studied patients where Mean Right proximal, MID, Distal CIMT was 0.94±0.17, 0.96±0.21 and 0.96±0.20 respectively while that of Mean left proximal, MID, Distal CIMT was 0.97±0.19, 0.98±0.20 and 0.97±0.19 respectively.

Table no . 7 Distribution of patients on the basis of CIMT.

		CIMT Mean ±SD	Min-Max
RIGHT CIMT	PROXIMAL	0.94±0.17	0.6-1.3
	MID	0.96±0.21	0.4-1.5
	DISTAL	0.96±0.20	0.5-1.4
	MEAN	0.95±0.18	0.54-1.4
LEFT CIMT	PROXIMAL	0.97±0.19	0.6-1.7
	MID	0.98±0.20	0.5-1.7
	DISTAL	0.97±0.19	0.5-1.4
	MEAN	0.97±0.18	0.5-1.53

The following table shows the mean of right CIMT where mean of right proximal 0.94±0.17, MID 0.96±0.21 DISTAL 0.95±0.18 and MEAN 0.95±0.18. This table shows the insignificant value of p (p>0.05)

Table No. 8: The table shows the CIMT of studies patients

	Right CIMT Mean±SD	Left CIMT Mean±SD	P -value
PROXIMAL	0.94±0.17	0.97±0.19	0.421
MID	0.96±0.21	0.98±0.20	0.627
DISTAL	0.96±0.20	0.97±0.19	0.798
MEAN	0.95±0.18	0.97±0.18	0.579

Below table showing the angiography findings on studies patients in which majority of LAD 14(28.0%) test performed on patients were followed by RCX 11(22.0%) while least one is LCX 2(4.0%). The combined tests were also performed in which LAD/RCA 9(18.0%), LAD/LCX 2(4.0%) and LAD/RCA/LCX 6(12.0%).

Table no.9 Distribution of patients on basis of their angiography findings

Angiography findings		Frequency (n=50)
Single	LAD	14 (28.0%)
	RCA	11 (22.0%)
	LCX	2 (4.0%)
Combined	LAD/RCA	9 (18.0%)
	LAD/LCX	2 (4.0%)
	RCA/LCX	6 (12.0%)
	LAD /RCA/LCX	6 (12.0%)

Below table shows the distribution of studied patients on the basis of cardiovascular risk factors according to the Intima-Media Thickness (IMT) in which shows the association between risk factors and carotid artery intima media thickness where it was seen that patients with mean CIMT >0.9mm were more prone to Hypertension with DM (42.0%)

Table No.10: Distribution of studied patients on the basis of cardiovascular risk factors according to the Intima-Media Thickness (IMT)

Risk Factor	Average CIMT mean≤0.90	Average CIMT >0.91	Total
Normal	5(10.0)	1(2.0%)	6 (12.0%)
DM	0 (0.0%)	1 (2.0%)	1 (2.0%)
Hypertension	5 (10.0%)	4 (8.0^)	9 (18.0%)
Hypertension with DM	3 (3.0%)	21 (42.0%)	24 (48.0%)
Smoking	1 (2.0%)	2 (4.0%)	3 (6.0%)
Hypertension & Smoking	0 (0.0%)	1 (2.0%)	1 (2.0%)
Hypertension with DM & CKD	0 (0.0%)	1 (2.0%)	1 (2.0%)
Hypertension with DM & Smoking	1 (2.0%)	2 (4.0%)	3 (6.0%)
Hypertension & CKD	0 (0.0%)	1 (2.0%)	1 (2.0%)
Smoking & CKD	1 (2.0%)	0 (0.0%)	1 (2.0%)
Total	16 (32.0%)	34 (68.0%)	50 (100.0%)

Below table shows the association between Angiography findings and average CIMT level in studied CAD patients where LAD was in majority 14(28.0%) followed by RCA 11(22.0%) while LCX 2(4.0%) was observed in least patients. In this the association was insignificant value of p (P<0.05).

Table no. 11: Association between Angiography findingsand average CIMT levels in studied CAD patients

Angiography findings	Frequency (N=50)	Average CIMT	P value

Single	LAD	14(28.0%)	0.99±0.12	0.868
	RCA	11(22.0%)	0.97±0.12	
	LCX	2(4.0%)	0.95±0.00	
Combined	LAD/RCA	9(18.0%)	0.94±0.075	0.122
	LAD/LCX	2(4.0)	0.75±0.14	
	RCA/LCX	6(12.0%)	0.96±0.11	
	LAD /RCA/LCX	6(12.0%)	0.94±0.13	

One-way ANOVA

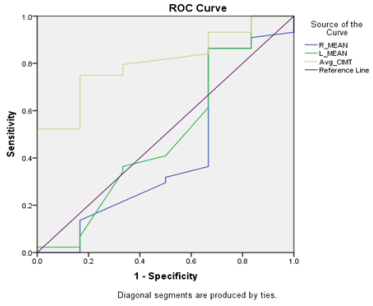
Below table showing the association between risk factors and average CIMT level in studied patients in which Hypertension and DM shows significant association ($p<0.05$) and other shows non-significant association ($p>0.05$) with average CIMT.

Table No. 12: Association between risk factors and average CIMT level in studied patients

Variable		Frequency (N=50)	Average CIMT	P value
Age Year	≤60	26(52.0%)	0.94±0.12	0.506
	>60	24(48.0%)	0.97±0.11	
Sex	Male	37(74.0%)	0.95±0.11	0.880
	Female	13(26.0%)	0.96±0.13	
Hypertension	Normal	11(22.0%)	0.87±0.11	0.005
	Hypertension	39(78.0%)	0.98±0.11	
DM	Normal	21(42.0%)	0.89±0.12	0.001
	DM	29(58.0%)	1.0±0.09	
Smoking	Normal	40(80.0%)	0.95±0.11	0.649
	Smoking	10(20.0%)	0.97±0.12	
CKD	Normal	44(88.0%)	0.95±0.12	0.992
	CKD	6(12.0%)	0.96±0.11	

Table no. 13: ROC analysis was used to compare the ability of CIMT values to indicate confirmed CAD. Of 50 studied patients 46 were found with CAD positive associated with risk factors and CIMT average mean of cutoff level for CAD was found 0.902. The area under the curve (AUC) of average mean CIMT was 0.807 (95% Confidence Interval 0.139–0. 713). The ROC analysis also showed that the optimal cutoff value CIMT average mean (>0.902) to indicate confirmed CAD with sensitivity of 75.0%, specificity of 83.3% and accuracy was 80.7%.

Case Processing Summary	
CAD with risk factors	Valid N (listwise)
Positivea(CAD with risk factors)	44
Negative (CAD without risk factors)	6
Larger values of the test result variable(s) indicate stronger evidence for a positive actual state.	
a. The positive actual state is Risk.	



Test Result Variable(s)	Area Under the Curve	Std. Error[a]	Asymptotic Sig.[b]	Asymptotic 95% Confidence Interval	
				Lower Bound	Upper Bound
Right Mean CIMT	.426	.147	.560	.139	.713
Left Mean CIMT	.498	.147	.988	.211	.786
Average Mean CIMT	.807	.076	.016	.659	.955
The test result variable(s): Right Mean CIMT, Left Mean CIMT, Average Mean CIMT has at least one tie between the positive actual state group and the negative actual state group. Statistics may be biased.					
a. Under the nonparametric assumption					
b. Null hypothesis: true area = 0.5					

	Right Mean CIMT	Left Mean CIMT	Average Mean CIMT
Cutoff point	0.915	0.870	0.902
Sensitivity	63.6	81.8	75.0
Specificity	33.3	33.3	83.3
Accuracy	42.6	49.8	80.7

Image-1

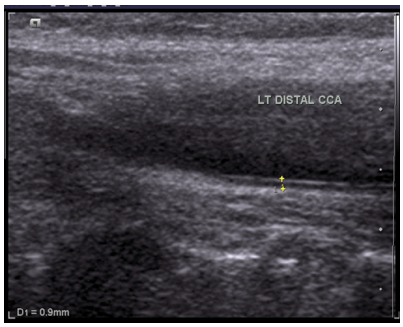


Image-2

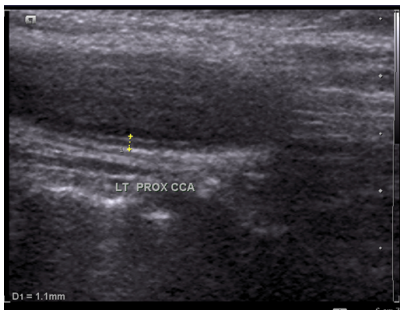


Image-3

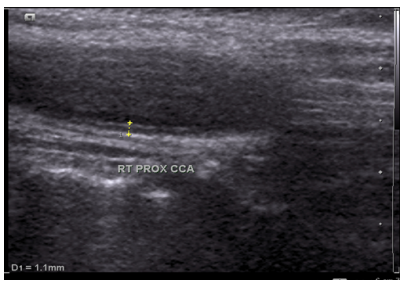
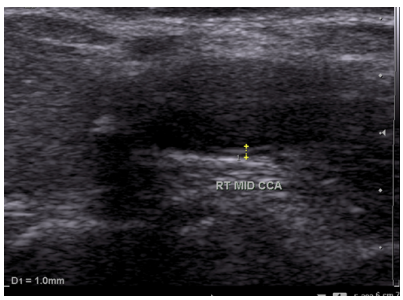


Image-4



DISCUSSION

Common carotid IMT has been reported as a precise measure of atherosclerosis, which is directly associated with progression and extent of organ damage in patients with cardiovascular disorders.[8] Increased IMT is an indicator of brain white matter lacunar infarctions, atherosclerosis and calcificationof the coronary arteries. **Linhartet al**[9] demonstrated that increased IMT is associated with increased left ventricular dysfunction in asymptomatic men who had ischemic heart disease risk factors. A relationship has also been reported between microabuminuria and IMT regardless of diabetes. Taking all these together, it can be concluded that IMT is not only the indicator of atherosclerosis but also a indicator of end organ damage secondary to arterial wall damage.

Mathew JE, Tankiwale SR and Acharya S[10]**.** performed a cross-

sectional study on co-relationof carotid artery intima media thickness with coronary artery disease.

Asif S. Wani et al[11] **and Saedi S et al**[12] also used the catheter coronary angiography to diagnose the coronary artery disease. The resulting sample size was 50 cases.

Comparison of Sample Size

Comparison of sample size used in various studies

Study	Year	Sample Size	Inference
Rosa EM, Kramer C and Castro[13]	2003	58	Intima-media thickness of the common carotid artery was significantly greater in patients with coronary artery disease
Mathew JE, Tankiwale SR and Acharya S[10]	2016	50	Increased carotid intima media thickness is a marker for coronary artery disease. It may haveconsiderable importance as a screening tool for coronary artery disease and may improve risk stratification.
Asif S. Wani et al[11]	2018	100	CIMT is a cheap and simple tool to predict the extent of CAD
SaediS et al[12]	2018	100	Diabetes mellitus and hypertension are related to increase carotid intima-media thickness.
Muhammad Haris et al[14]	2018	58	The increase in CIMT value has a significant positive correlation with the Syntax value. A CIMT > 0.71 mm is an independent risk factor of high Syntax value in stable coronary artery disease with prevalence ratio 5.27
Present study	2019	50	---

In our study, 50 patients diagnosed with coronary artery disease (CAD) were included in the study. Similar sample was also used by **Mathew JE, Tankiwale SR & Acharya S**[10]**, Rosa EM, Kramer C & Castro** and **Muhammad Haris et al**[13] in their respective studies. Some studies **Asif S. Wani et al**[11] and **Saedi S et al** have reported higher sample size which might be due to increased number of inclusion criteria or geographical changes of the study.

Comparison of age of studied patients

Study	Mean Age in years
Present study	49.66±12.17 (35-95)
da Rosa EM et al[13]	51±7.5 (40-65)
Subhash Kaul et al[15]	58.1±10.6 (40-98)
Muhammad Haris et al[14]	56.96±7.73 (18-75)
Lankarani KB et al[16]	42.64 ± 13.89 (18 to 88)

The mean age of the cases in our study was found to be **49.66±12.17** with range **(35-95 Years)** which is comparable to the studies conducted by **da Rosa EM et al**[13] and **Lankarani KB et al**[16] as mentioned in the above table. This implies that the coronary artery disease (CAD) mostly occurs after 50 year of life. **Subhash Kaul et al**[15] and **Muhammad Haris et al**[14] concluded that coronary artery disease (CAD) occurs after 55 years of age. The age is a non modifiable cardiovascular risk factor.

Comparison of Gender

Study	Male (%)	Female (%)
Rosa EM et al[13]	55.0%	45.0%
Lankarani KB et al[16]	42.0%	58.0%
Muhammad Haris et al[14]	86.2%	13.8%
Kaul S et al[15]	67.7%	32.3%
Present study	74.0%	26.0%

In our study 74.0% of the males had CAD as compared to only 26% of females and hence male to female ratio was 2.8:1. Similar studies were conducted by **Kaul Set al**[15]**.** who reported 67.7% of the males affected, **Muhammad Haris et al**[14] observed that 86.2% of the males involved and **da Rosa EM et al**[13] found 55.0% of the males with coronary artery disease (CAD) while **Lankarani KB et al**[16] stated the only 42.0% of the males were diagnosed with coronary artery disease (CAD) in his studies..This clearly signifies that males are more affected than females Majority of the mentioned studies have been conducted in patriarchal societies which justifies the higher prevalence of CAD in males and also because of higher consumption of tobacco, alcohol and more smoking habits, among males.

A number of studies have shown that the increased carotid IMT and plaques in that zone, regardless of stenosis, are associated with an increase in relative risk of having a cardiovascular event. i.e higher the value, the greater is the risk. Thus the European guidelines for Hypertension consider a carotid IMT value >0.9 mm to be a marker of end-organ damage and hence an identifier of a high-risk patient. On one hand, emerging clinical evidence indicates that below <0.9mm ,the carotid IMT does not reflect atherosclerotic disease as such, although it would reflect the vascular changes produced by aging and the adaptive response of the vessel to the increased hemodynamic load provoked by Hypertension .Pathological studies have shown that intimal hyperplasia is associated with age and fibro-muscular hyperplasia secondary to Hypertension can cause an increase in carotid IMT even in the absence of atherosclerotic plaques. In fact, the close relationship between carotid IMT and age has been established, with thickness ranging between 0.7 mm and 1.5 mm, and increasing by 0.01 mm to 0.02 mm for each year of life. Thus there is a significant effect of age in overall cardiovascular risk model.

In our study we observed that the mean CIMT was 0.97±0.18 (Range 0.59-1.47mm) in CAD patients which is comparable with a case-control study conducted by **Mathew JE et al**[10] who diagnosed cases of CAD with increased carotid artery intima media thickness with mean of 1.17 ± 0.21. The findings were statistically significant(P value =0.0001).Similar study was conducted by **Ugur Coskun et al**[17] which concluded that mean CAIMT in patients with CAD was 1.48 ± 0.28 (p=0.001).

In our study we observed an association between risk factors and carotid artery intima media thickness where it is observed that patients with mean CIMT >0.9mm were more prone to Hypertension with DM (42.0%) with a p value of <0.05 which is statistically significant. A study conducted by **Asif S. Waniet al**[11] establishes a significant correlation between CIMT and hypertension with diabetes. Hypertensive and diabetic patients had higher CIMT values (statistically significant) than normotensive and non-diabetic patients. Our results were consistent with study conducted by **Ugur Coskun, et al**[17] who used Logistic regression analysis to identify CIMT (p= 0.04) for predicting CAD. Another study conducted by **Steven M Haffne et al**[18] found that both diabetes and CAD were associated with increased atherosclerosis in the CCA. Other variables like age, sex, CKD, Lipid profile were statistically insignificant in calculating CIMT.

In our study we observed that angiographic findings of majority of patients were of LAD 14 i.e 28.0% followed by RCX 11 i.e. 22.0% followed by LCX 2 i.e. 4.0%. The combined test were also performed in which LAD/RCA was 9 i.e. 18.0%, LAD/LCX was 2 i.e. 4.0% and LAD/RCA/LCX 6 i.e. 12.0%. CIMT was 0.96±0.17 in case of single vessel disease and CIMT 0.98±0.17 in case of two or more than two vessel disease. The association was insignificant with a p value of >0.05. While **GeroulakosG et al**[19] in his studies concluded that CAIMT was significantly higher in patients of CAD with a mean intima media thickness of 0.9±0.17mm which was statistically significant (P<005) in patients of single vessel disease, 0.96±0.17mm (P<0.01) in two vessel disease and 0.99± 0.21mm (P<0.01)in three-vessel disease.**Naomi Mitsuhashet al**[20] reported that CIMT was not associated with the number of coronary vessels in their subjects showing >50% stenosis. However, **Adams MR et al**[21] suggested that IMT may be associated with the number of stenosed vessels in non-diabetic subjects, although **Mack WJ et al**[22] also did not find an association between IMT and the number of diseased vessels in his studies. It is well known that most diabetic patients with CAD have multi-vessel disease and diffuse stenosis in the coronary arteries. **Naomi Mitsuhash et al**[20] in his study concluded that all his diabetic subjects with CAD had multi-vessel disease (two- or three-vessel disease). However there remains a possibility of inter-observer variations in the reading of the Carotid Artery Intima Media Thickness. In our study ROC analysis was used to compare the ability of CIMT values to indicate confirmed CAD. Out of 50 studied patients 44 were found to be associated with risk factors and CIMT average mean cutoff level for CAD was found to be 0.902. The ROC analysis also showed that the optimal cutoff value for CIMT average mean was (>0.902)

with a sensitivity of 75.0%, specificity of 83.3% and accuracy of 80.7%. The Carotid Artery Intima Media Thickness has been the focal point of numerous studies. **The Atherosclerosis Risk in Communities (ARIC)**[23] was conducted on 15,792 individuals. The carotid artery intima media thickness was measured at the beginning of the study and then repeated at an interval of 4-7 years using B mode ultrasonography. An increase in CAIMT was shown to be correlated with an increased risk for CAD. Another study was conducted by **Paul Jayanta et al** showed that the Carotid Artery Intima Media Thickness acted as a surrogate marker of Atherosclerosis in Patients with Chronic Renal Failure on Hemodialysis. In another study conducted by **Stein James H et al**[18] concluded that CIMT was an essential tool in monitoring the usefulness of preventive strategies like lifestyle changes, in the progression of atherosclerotic heart disease. Currently, there is a growing consensus that the Carotid Artery Intima Media Thickness is a useful predictor in asymptomatic individuals or people who are at risk of developing coronary artery diseases. **The American Heart Association at a conference in 2001**[24] recommended the use of CAIMT for risk stratification in patients suspected of CAD. In 2008, the **American Society of Echocardiography**[25] issued a similar statement.

Since the gold standard for Coronary Artery Disease remains a Coronary Angiogram which is invasive and not without its own limitations, it cannot be used routinely and should be used only in cardiac emergencies or when there is a strong clinical suspicion in favor of CAD. In this study, it was found that increased carotid intima media thickness, which is measured non-invasively, is a marker for coronary artery disease. When used with other non-invasive modalities, CIMT may prove useful in clinical practice as it may increase the level of clinical suspicion for CAD. It has proved to be reliable, cost-effective screening tool for Coronary Artery Disease.

CONCLUSION

Male Gender was dominant for coronary artery disease in our study.Mean CIMT >0.902mm was indicated to coronary artery disease with sensitivity of 75.0%, specificity of 83.3% and accuracy was 80.7%. Hypertension with diabetes was significant associated with CIMT in coronary artery disease.Older age was non-modified risk factors for coronary artery disease.

CAIMT may be helpful in identifying subclinical cases of CAD and evaluating the risk of developing cardiovascular diseases in patients with intermediate risk.

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