

ATHEROSCLEROSIS IN CORONARIES IN MALWA REGION OF PUNJAB

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ABSTRACT

The study involves the gross and microscopic examination of coronary arteries of 200 cases of all age groups brought to mortuary of Rajindra Hospital Patiala for post mortem from Malwa Region of Punjab. The study was carried out to find out prevalence, pattern, frequency and severity of atherosclerotic changes in coronary arteries. The study was conducted in the department of Forensic Medicine and Department of Pathology Government Medical College Patiala.

Key Words :

INTRODUCTION

Crime rate is showing upward trend due to rise in population, unemployment and alcohol/drug addiction, earning competition, physical and mental stress etc. Today life has become very busy and hectic and food habits are changing. Pattern of diseases causing fatality is also changing. Therefore it is very difficult to label the exact role played by the two factors i.e. natural disease and trauma in cases of unnatural deaths.

On gross examination, atheromatous areas look like a raised yellowish plaque. Initially the lesion is focal and in late stages it becomes confluent. Uniform involvement of coronary artery is uncommon thus producing eccentric thickening of walls and narrowing of the lumen. Ulceration and thrombosis may be followed. Calcification and even ossification are some times seen.

Microscopically, atheromatous area shows increase of ground substance, disintegration of internal lamina, accumulation of foam cells containing fat in the intima and subintimal regions. Many of the cells rupture causing release of fat into the surrounding tissue exciting chronic inflammatory cell reaction. Areas of calcification and cholesterol clefts may be seen overlying intima which shows fibrosis.

The incidence of coronary arteries involvement is anterior descending branch of left coronary artery (45-64%) especially first part, right main coronary artery (24-46%) especially proximal

part, left circumflex coronary artery (3-10%) especially first part and left main coronary artery (0-10%)[1].

The incidence of coronary artery disease is less common, amongst Nigerian as compared to the other races. In India it accounts for 85% of all the sudden deaths [1].

MATERIALS AND METHODS

CORONARY ARTERIES

200 cases brought to the mortuary of Rajindra Hospital Patiala were studied. Both the gross and histopathological examination of coronary arteries was done.

Right: - The coronary artery from origin (excluding ostium) to the margin of the posterior ventricular septum, excluding any branch.

Left: -

A) Left anterior descending: - The left coronary artery from its origin (excluding ostium) and the anterior descending branch excluding any of its subepicardial branches.

B) Circumflex: - The circumflex branch of left coronary artery excluding any of its subepicardial branches.

Coronaries were cut serially at 2-3 mms distances examined grossly in mortuary and histopathological examination was done in Pathology Department.

OBSERVATIONS

The present study was conducted to find out

the prevalence, incidence, pattern, frequency and severity of atherosclerosis. Further the various factors affecting the same were also studied and detailed observations were made from 200 cases as follows:

The above table is showing that the maximum

number of cases in the present study was of the Road Side Accident 105(61.76%) and the minimum numbers of cases are from the Pulmonary Tuberculosis, gun shot and air tank blast. The total number of cases studied was 200 in number.

Table 1
Distribution of cases according to cause of death and sex

S.no.	Cause of death	Male		Female		Total	%age
		No.	%age	No.	%age		
1	Road Side Accident	105	61.76	8	26.67	113	56.5
2	Railway accident	7	4.18	3	10	10	5
3	Asphyxia	2	1.17	-	-	2	1
4	Poisoning	32	18.82	8	26.67	40	20
5	Burns	7	4.18	9	30	16	8
6	Fall in well	2	1.17	-	-	2	1
7	Pulmonary Tuberculosis	1	0.59	-	-	1	0.5
8	Electrocution	4	2.35	-	-	4	2
9	Domestic accident	6	3.53	1	3.33	7	3.5
10	Drowning	2	1.17	-	-	2	1
11	Gun shot	1	0.59	-	-	1	0.5
12	Assault	-	-	1	3.33	1	0.5
13	Air tank blast	1	0.59	-	-	1	0.5
	Total	170	100	30	100	200	100

Table 2
Distribution of cases according to Age and Sex

Age group	Male		Female		Total	
	No.	%age	No.	%age	No.	%age
0-10	--	-	-	-	-	-
11-20	24	14.16	4	13.38	28	14
21-30	47	27.65	8	26.67	55	27.5
31-40	47	27.65	8	26.67	55	27.5
41-50	24	14.16	4	13.33	28	14
51-60	15	8.82	4	13.33	19	9.5
61-70	8	4.70	1	3.33	9	4.5
71-80	4	2.35	1	3.33	5	2.5
81-90	1	0.59	-	-	1	0.5
>90	--	-	-	-	-	-
Total	170	100	30	100	200	100

The above table shows that in the present study the maximum number of cases 55(27.5%) were from the age group of 21-30 years and 31-40 years 55(27.5%). The minimum number of cases from the age group of 81-90 years.

Table 3
Distribution of cases according to Personal Factors

Personal Factor	Yes/No	No. of cases	% age
Diet	Vegetarian	47	23.5
	Non-vegetarian	153	76.5
	Total	200	100
Alcoholic	Yes	20	10
	No	180	90
	Total	200	100
Smoker	Yes	32	16
	No	168	84
	Total	200	100

The above table shows the maximum number of cases was Non-vegetarians, Non-alcoholics and Non-smoker.

Table 4

Comparison of atherosclerosis in RCA, LADA and LCX

Sr.no.	Grade of atherosclerosis	RCA		LADA		LCX	
		NO. OF CASES	% AGE	NO. OF CASES	% AGE	NO. OF CASES	% AGE
I	Mild	90	48	64	32	73	36.5
II	Moderate	27	13.5	82	41	25	12.5
III	Severe	4	2	17	8.5	1	0.5
IV	None	79	39.5	37	18.5	101	50.5
	Total	200	100	200	100	200	100

Above table shows maximum 4 (2%) cases with severe atherosclerosis in RCA, 17 (8.5%) in LADA and 1 (0.5%) in LCX

DISCUSSION

Atherosclerosis is a multifactorial disease affected by various factors, such as smoking, personality characteristics, alcohol consumption, presence of stress and strain in life etc. Many studies have been undertaken in the past to study the association of various factors leading to atherosclerosis and hence to CAD.

In past few decades Punjab has undergone a rapid change in the way of life style, eating habits, stress, strain and environmental pollution. In the present study a sincere effort has been made to study the effect of these various changed environmental factors on atherosclerosis.

Prevalence and Pattern of Atherosclerosis with Age

In present study it was observed that 170 cases (85%) were male and 30 (15%) were female which are more or less similar to most of the studies conducted in past, Murthy et al [2] studied 150 cases out of which 123 (82%) were males and 27 (18%) females. observed 74.5% and 25.5% females in their study, Padnavati and Sandhu [3] Tandon et al [4] found 66.5% males and 33.5% females, Bhargava and Bhargava [5] 74.8% males and 24.2% females in their study. The reason being that as the males are the bread earners and females usually doing the house hold chores, thus

making the males more vulnerable to accidents, violence, stress etc. Maximum cases studied in present study were in the age group of 21-30 and 31-40 years.

Atherosclerotic changes develop very early in life starting from age of 17 years onwards. Over all incidence of atherosclerosis was found to be 156 (78%). Incidence in male in second decade 45.83 % and from fifth decade onwards it was 100% involvement in female. Least incidence was found in 0-10 year without any lesion in both sexes. Severity of lesion increased with increasing age. Earlier studies in India by Wig [6] found significant atheroma in 2/3rd of the cases above the age of 20 years. While Tandon [4] found atherosclerosis in 2nd and 3rd decades (14.3 %). Thereafter there was steep rise in both the studies. In past studies by, Murthy [2] observed 28%, Padnavati and Sandhu [3] found 24, 4%, Tandon et al 1969 seen 25.5% and by Bhargava and Bhargava [5] 20.40% maximum cases in age group of 21-30 years.

In the present study it was observed that maximum number of cases 55 (27.5%) belong to age group of 21-30 and 31-40 years each, reason being the active and fast life style of these age groups.

Incidence of atherosclerosis

The incidence of atherosclerosis in the present study was 78% (80% in males and 66.6 % in females), in previous studies incidence of atherosclerosis observed was 82% by Allison et al [7], 73% by Murthy et al [2], 67.3% by Padnavati and Sandhu [3].

In the present study, incidence of coronary atherosclerosis was 68% in males and 27% in females i.e. male have 41% more incidence of atherosclerosis than the females. Similarly in the previous studies also incidence of atherosclerosis was found more than in female [1]. The incidence of coronary arteries involvement in anterior descending branch of left coronary artery (45-64%) especially first part, right main coronary artery (24-46%) especially proximal part, left circumflex coronary artery (3-10%) especially first part and left main coronary artery (0-10%).

Factors Affecting the Prevalence and Severity of Atherosclerosis

In the present study the number of alcoholics

was 20. In alcoholics 7 cases had mild, 8 moderate degree of atherosclerosis; there was no case with severe degree of atherosclerosis. Non-vegetarian were 153 and had 4 cases were having severe, 22 moderate and 82 were having mild degree of atherosclerosis. Atherosclerosis in RCA, the incidence was more in smokers (71.9%) as compared non smokers (58.3), in the non-vegetarian (70.5%) where as (27.7%) in vegetarian, maximum cases are of alcoholics (75%) and in non alcoholics the incidence was 58.9%). It was concluded that smokers, alcoholics and non vegetarian were more prone to atherosclerosis.

SUMMARY AND CONCLUSIONS

The study showed that the male: female ratio distribution of cases was 170:30, the age of the cases varied from 15 to 82 years with coronary atherosclerosis was seen at the minimum age 18 years which are quite early age for development of atherosclerosis in coronaries.

It was seen that atherosclerosis was found in 78% of cases which is a very high incidence and it seems to correlate with changing habit and life style and environmental pollution. The commonest type of lesions in the present study was fatty streaks 45%. Alcohol, smoking, diet, type of job was not showing a linear correlation with atherosclerosis but seems to have severity of degree of smoking, alcohol consumption, also observed in vegetarian diet with low consumption of calories leads to lesser incidence of atherosclerosis and even if lesion to develop they are of less severity.

The maximum 27.5% cases each were studied from the age groups 21-30 years and 31-40 years, incidence of coronary artery atherosclerosis in male was 80% and 66.66% in

females.

Incidence of coronary artery is very high in this part of Punjab State. Though the incidence of coronary artery disease is more in males as compared to females, but in both the sexes it is alarming.

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