

Evaluation of Coronary Prone Behaviour as an Independent Risk Factor in Coronary Artery Disease Among Air Force Personnel

Wg Cdr BS Saini*, Air Cmde SP Varma**, Wg Cdr V Agnihotri+, Wg Cdr UB Mathur++

The contribution of behavioural and environmental factors in the pathogenesis of coronary artery disease (CAD) was studied. 30 angiographically proven cases of ischaemic heart disease (IHD) formed the experimental group whereas 30 angiographically negative cases but having some ECG abnormality/ Treadmill test (TMT) positive acted as controls. Type 'A' Behaviour was seen only in 16.66% of the experimental group and majority of these (66.66%) were seen to have Type X behaviour pattern with anxious type of personality predominating. Majority of cases in experimental group showed changes in their life style after confirmation of the diagnosis of coronary artery disease.

Key words : Type A, B and X Behaviours, Coping Response

Coronary artery disease (CAD) is one of the major source of morbidity and mortality especially in population between the age group of 30 to 60 years. This, besides creating considerable personal loss, has wider implication in all social fields. The aircrew in Indian Air Force are affected by CAD at the peak of their professional career.

Epidemiological studies have identified risk factors like age, family history, smoking, hyperlipidemia, hypertension and diabetes mellitus which demonstrate strong and consistent association with the prevalence of CAD. These factors however in combination account for about 50% of variance associated with CAD^{1,4}. In recent years, there has been greater emphasis for research to find out additional contributory factors associated with CAD.

One of the risk factors under increasing attention as well as topic of research, has been the contribution of behavioural and environmental factors in pathogenesis of CAD. Historically, Harvey in 1628 and Osler in 1892, noted in their writing the close relation of emotion and overwork to CAD. The major thrust has however, taken

place during last 25 years and the coronary prone behaviour has come into usage. It encompasses various things like stressors, significant life events, social support net work and certain pattern of behaviours^{5,8}. Friedman and Rosenman in 1959 identified a constellation of behaviours (later termed the type 'A' behaviour pattern). It consisted of extreme competitiveness, impatience, aggressiveness and hostility, combined with time urgency and excessive involvement with their work. They appeared chronically tense, hurried, restless and spoke in an accelerated explosive manner, continually interrupting the persons speaking to them. They appeared to be in a chronically 'aroused state', attempting to achieve ever more difficult goals with ever diminishing resources (called sisyphus complex).

Type 'B' behaviour was characterised by the absence of the behaviour pattern type 'A'. Since the study by Friedman and Rosenman, several studies have assessed the relationship between type 'A' behaviour and CAD. Two major studies by Framingham and Western collaborative group show that risk conferred by behaviour pattern was independent of other risk factors.

Some studies have also assessed correlation between type 'A' behaviour and CAD as determined by coronary angiography. In India, there is no study which correlates type 'A' behaviour with CAD as determined by coronary angiography. The study of Dimesdale et al do not support the relationship between type 'A' behaviour and CAD.

The recent studies in the world are using physical signs criteria for diagnosis of type 'A' behaviour but so far no Indian study has used this criteria. There are twenty physical signs of type 'A'

* Classified Specialist (Neuropsychiatry) + Classified Specialist (Medicine) ++ Classified Specialist (Pathology).
Air Force Central Medical Establishment, Subroto Park, New Delhi - 110 010
** Deputy Commandant, Command Hospital Air Force, Bangalore-560007

behaviour out of which seven are most common. The present study was undertaken to find any correlation between angiographically proven cases of CAD and Type 'A' behaviour as determined using physical signs criteria.

Material and Methods

30 cases of IHD (symptomatic/asymptomatic) as proved by coronary angiography, formed the subjects of the study. All cases reported to AFCME for cardiac evaluation. 30 cases which were found to be angiographically negative but had some ECG abnormality and TMT positive, formed the control. All cases were assessed psychologically before angiography to exclude any bias and were matched for their demographic variables. The cases with other risk factors like family history, smoking, hypertension, diabetes mellitus and hyperlipidemia were excluded from the study during the selection of cases for control and experimental group to find out the coronary prone behaviour as independent risk factor.

To assess type 'A' behaviour, the Framingham type 'A' scale has been used. The cases were further subjected to structural interview and psychological tests like 16 PF, NPQ, Nine factors personality test, tailor manifest anxiety scale and emotional reaction schedule. The data are statistically analysed and compared with control group.

After applying Framingham type 'A' scale, all cases were subjected to physical signs criteria of type 'A' personality. Out of following seven signs, at least one sign was considered necessary for the diagnosis.

Physical signs of Type 'A' Behaviour

1. Excess forehead or lip perspiration.
2. Explosive hostile speech.
3. Lateral tick like retraction of lips
4. Hurrying & interruption of speech of others.
5. Periorbital pigmentation or tanning.
6. Facial Hostility.
7. Tic like retraction of upper eye lids exposing sclera above the iris.

The diagnosis of type 'A' behaviour was

made by physical signs alone, irrespective of the possible denial of all type 'A' symptoms and traits.

Result and Discussion

The common immediate responses to myocardial infarction are fear and minimisation of danger (denial). Fear implies that the victims realise that his symptoms signify a heart attack. Intense fear may contribute to onset of lethal

Table-I Personality type as per type 'A' scale and physical signs

	Experimental Group		Control Group	
	No.	%	No.	%
Type A	05	16.66	—	—
Type B	05	16.66	26	86.66
Type X	20	66.66	04	13.33

cardiac arrhythmias with electrical instability of heart. Denial interferes with the decision process to seek immediate help which may prove fatal.

Table-II Analysis of Type X (Intermediate & unclassified category)

	Experimental Group		Control Group	
	No.	%	No.	%
1. Anxious	16	80	02	50
2. Obsessive compulsive	03	15	01	25
3. Others	01	05	01	25

A careful observation of the results of this study showed some important trends. The experimental group showed only 16.66% of type 'A' personality pattern while control group showed no type 'A' personality pattern but mainly type 'B' personality. Majority of experimental group belong

Table-III Stress Factors/significant life events preceding illness

	Experimental Group		Control Group	
	No.	%	No.	%
1. Service causes	03	10	01	3.33
2. Domestic	04	13.33	02	6.66
3. Marital	02	6.66	-	-
4. Financial	03	10	01	3.33
5. Others	02	6.66	01	3.33
6. No stress factor	16	53.33	26	86.66

to an intermediate category (Type X) personality pattern of behaviour. The further analysis of type X personality pattern by various psychological tests revealed that 80% belonged to anxious type

Table-IV Psychological Reactions (Coping response) to IHD

	Number	%
1. Realistic acceptance of damages and judicious attempt at full rehabilitation	16	53.33
2. Excessive dependence with/without anxiety/ depression/ conversion symptoms and related perpetuation of sick role.	08	26.66
3. Denial of the significance of disease and attempt to live as if it does not exist.	02	6.66
4. The use of Heart disease to manipulate and control others by playing on their sympathy and feeling of guilt.	04	13.33
Total	30	100.00

of personality pattern. These people worry more over trivial matters. They were exaggerators in their encounters with day to day problems and disruptive life situations. They showed related history of autonomic nervous system overactivity. These findings are contradictory to many

Table-V Changes of Style

	Experimental Group		Control Group	
	No.	%	No.	%
1. Significant changes in life style.	28	93.33	25	83.33
2. Minimum change	02	6.66	05	16.66

studies^{3,4,11} but are in conformity with Shikelle et al⁹. No Indian study has used coronary angiography proved cases and physical sign criteria for study of coronary prone behaviour in IHD cases. Type 'A' personality pattern is probably a Western culture pattern and type X behaviour people are more commonly prone to get IHD in India.

Another cause for less number of type 'A' behaviour in our study can be that we have excluded the cases of other variables like smoking, hypertension, hypercholesterolemia, family history etc.

Majority of cases in experimental group showed changes in their life style after the confirmation of CAD. They showed moderation in their temperament, desire and ambitions. They paid greater attention to their diet and exercise as advised by cardiologist. This was probably because of realistic fear and acceptance of the disease. Interestingly, control group

(Angiographically negative cases) also showed change in their life style with regard to diet, exercise, moderation of their temperament, desire and ambitions.

Conclusion

This study did find typical type 'A' behaviour in some of the CAD cases but majority of cases showed but a constellation of behaviour which is classified under type X behaviour. It can be psycho-physiologically correlated to type 'A' behaviour. Change of life style including modification of coronary prone behaviour may prove useful in prevention and recurrence of CAD in future studies.

REFERENCES

1. Friedman M, Rosenman RH : Association of specific overt behaviour pattern with blood and cardiovascular findings. JAMA 1959; 169 : 1286-1296.
2. Rosenman RH, Brand RJ, Jenkins CD et al : Coronary heart disease in the Western Collaborative Group Study : Final follow-up experience of 8.5 years. JAMA 1975 ; 233 : 872-877.
3. Blumenthal JA, Williams RG and Kong Y, et al : Type A behaviour pattern and coronary atherosclerosis. Circulation 1978; 58: 634-639.
4. Haynes SG, Feinleib M and Kannel WB : The relationship of psychosocial factors to coronary heart disease in the Framingham study. III Eight year incidence of coronary heart disease. Am J Epidemiol 1980; 111: 37-59.
5. Friedman M, Thoresen CE, Gill JJ et al : Alteration of Type A behaviour and its effects on cardiac recurrences in post myocardial infarction patients: Summary result of the Recurrent Coronary Prevention Project. Am Heart J 1986; 112 : 665.
6. Friedman M, Byars SO, Rosenman RH : Serum lipids and constrictive circulation after fat ingestion in men exhibiting type 'A' behaviour pattern. Circulation 1964; 29 : 874-886.
7. Friedman M, Rosenman RH, Straus R et al : The relationship of behaviour pattern A to the state of coronary vasculature. Am J Med 1968; 44: 525-537.
8. Friedman M, Powell LH : The diagnosis and quantitative assessment of Type A behaviour: introduction and description of the videotaped structured interview. Integrative Psychiatry 1984; 1: 123-129.
9. Shikelle RB, Hulley SB, Neaton JD et al : The MRFIT behaviour study: II. Type A behaviour and incidence of coronary heart disease. Am J Epidemiol 1985; 122: 559-570.
10. Friedman M, Powell LH, Thoresen CE et al: Alteration of type A behaviour and reduction in cardiac recurrence in post myocardial infarction patients. Am Heart J 1984; 108: 237-248.
11. Ghulam R : Coronary prone behaviour and CAD. Ind J Psychiatry 1990; 32(1): 35-38.