

ORIGINAL ARTICLE

Cardiovascular Changes in Smoker and Nonsmoker Male Stroke Patients

Nasrin Habib¹, Md. Ruhul Amin², US Naima Begum³, Najneen Akhter⁴, Dilruba Akhter⁵,
Mamunur Rashid⁶, Md. Niazur Rahman⁷

Abstract:

This descriptive study was done in the Department of Physiology, Dhaka Medical College, Dhaka, during the period of January 2008 to December 2008. The objective of the study was to measure pulse and blood pressure in smokers and nonsmoker adult male stroke patients and to find out changes in pulse and blood pressure among the smoker and non-smoker stroke patients. To accomplish this purpose 105 patient of over 20 years of age were selected. They were divided into two groups; Group A consisting of thirty non-smoker and group B consisting of seventy five smoker stroke patients. The finding showed that smoking caused no statistical significant difference ($p>0.05$) in pulse and systolic blood pressure among the groups. Diastolic blood pressure was significantly higher ($p<0.05$) in smokers than non-smokers. The study therefore provides the scope to understand the altered physiology of smoker stroke patients.

Introduction:

The burden of stroke in a developing country like Bangladesh may be measured from data on mortality, incidence, prevalence, long term outcome and cost of care. It is the third commonest cause of death in developed countries. Lack of adequate control of blood pressure is an important risk factor for stroke. Blood pressure refers to the pressure inside the

arteries. As hypertension is the most treatable risk factor, stroke is decreasing in the 40-60 age range as hypertension is treated. Hypertension may also cause thickening of the artery walls, resulting in narrowing and eventual blockage of the vessel (ischaemic stroke). In atherosclerosis, the pressure of pumping blood could 'hose off' debris from damaged artery walls.

The circulating debris (embolism) can cause a stroke by lodging in and blocking a blood vessel of the brain¹. Nicotine of cigarettes raises blood pressure by constricting blood vessels because it directly stimulates the production of epinephrine in the adrenal gland, which raises blood pressure by constricting blood vessels². Numerous large studies have noted that the risk of stroke and stroke related mortality is higher in smokers than non-smokers and smoking cessation reduces the risk³.

1. Lecturer of Physiology, Holy Family Red Crescent Medical College, Dhaka.
2. Professor of Physiology, Dhaka Medical College, Dhaka.
3. Professor of Physiology, Holy Family Red Crescent Medical College, Dhaka.
4. Associate Professor of Physiology, Holy Family Red Crescent Medical College, Dhaka.
5. Assistant Professor of Physiology, Holy Family Red Crescent Medical College, Dhaka.
6. Assistant Registrar, Department of Medicine, Dhaka Medical College Hospital, Dhaka.
7. Lecturer of Physiology, Holy Family Red Crescent Medical College, Dhaka.

Smoking and high blood pressure both increase the risk of hemorrhagic stroke. Since it is found that these two risk factors have a synergistic effect, quitting smoking and lowering blood pressure will contribute to preventing stroke⁴. So, the present study was to find out associated changes of blood pressure among the smoker and non-smoker stroke patients.

Materials and method:

The present study was done to compare the blood pressure in adult male smoker and nonsmoker stroke patients. For this purpose, 105 subjects age over 20 years were selected, of whom, 30 were non-smokers and 75 were smokers, who smoked for more than five years. They were grouped as Group-A and Group-B respectively.

Results:

The mean (\pm SD) of pulse rate were 84.07 \pm 11.011 in Group A and 81.60 \pm 9.868 in Group B respectively.

The participants were selected from indoor medicine units of Dhaka Medical College Hospital. All the subjects were explained about the aims and objectives of the study. The test procedures were briefed. A detailed history of each subject including smoking history was obtained by using a pre-tested questionnaire. Written consent was taken from person concerned in a prescribed form. Pulse and blood pressure were recorded during the interview. Statistical analysis of results between the groups was done by using unpaired students 't' test.

Table I: Showing the mean of age, history of hypertension (HTN), family history of hypertension and medication history

Group	N	Age Mean(\pm SD)	History of HTN		Drug intake		Family H/O HTN	
			Yes	No	Yes	No	Yes	No
A	30	61.70 \pm 16.379	12 (40.0%)	18 (60.0%)	4 (13.3%)	26 (86.7%)	11 (36.7%)	19 (63.3%)
B	75	62.61 \pm 15.803	33 (44.0%)	42 (56.0%)	17 (22.7%)	58 (77.3%)	24 (32.0%)	51 (68.0%)

Table-II: Mean (\pm SD) of measured values of systolic and diastolic blood pressure and their statistical analysis

Group	N	Systolic blood pressure	Diastolic blood pressure
A	30	155.17 \pm 26.668	92.50 \pm 13.310
B	75	165.07 \pm 24.294	100.47 \pm 13.259
A vs B (P Value)		0.070 (NS)	0.006 (S)

NS = Not significant by unpaired student "t" test

S = Significant by unpaired student "t" test

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8. Green MS, Jucha E, Luz Y. Blood pressure in smokers and nonsmokers: epidemiologic findings. *Am Heart J* 1986; 111: 932-40.
9. Savdie E, Grosslight GM, Adena MA. Relation of alcohol and cigarette consumption to blood pressure and serum creatinine levels. *J Chronic Dis* 1984; 37: 617-23.
10. Goldbourt U, Medalie JH. Characteristics of smokers, non-smokers and ex-smokers among 10,000 adult males in Israel. II. Physiologic, biochemical and genetic characteristics. *Am J Epidemiol* 1977; 105: 75.
11. Hughes K, Leong WP, Sothy SP, et al. Relationships between cigarette smoking, blood pressure and serum lipids in the Singapore general population. *Int J Epidemiol* 1993; 22: 637- 43.
12. Handa K, Tanaka H, Shindo M, et al. Relationship of cigarette smoking to blood pressure and serum lipids. *Atherosclerosis* 1990; 84: 189-193.
13. Berglund G, Wilhelmsen L. Factors related to blood pressure in a general population sample of Swedish men. *Acta Med Scand* 1975; 198: 291-8.
14. Price JF, Mowbray PI, Lee AJ, et al. Relationship between smoking and cardiovascular risk factors in the development of peripheral arterial disease and coronary artery disease: Edinburgh Artery Study. *Eur Heart J* 1999; 20: 344-53.
15. Sandra BG, Myrna JA, Herman AT, et al. Smoking habits and blood pressure change: A seven year follow-up. *J Chron Dis* 1977; 30: 401-413.
16. Henkin L, Zaccaro D, Haffner S, et al. Cigarette smoking, environmental tobacco smoke exposure and insulin sensitivity: The Insulin Resistance Atherosclerosis Study. *Ann Epidemiol* 1999; 9: 290-6.