

LETTER TO THE EDITOR

INFLUENCE OF FAMILIAL HYPERTENSION ON BLOOD PRESSURE, SERUM CHOLESTEROL, HIGH DENSITY LIPOPROTEIN CHOLESTEROL DURING SECOND AND THIRD DECADE OF LIFE IN PUNJABI POPULATION

Sir,

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An elevated arterial pressure is probably the most important public health problem these days. Although hypertension may be diagnosed and treated easily, but as it is asymptomatic in most of the cases initially, therefore if left untreated or not treated effectively it may lead to severe complications such as coronary artery disease, congestive heart failure and stroke etc (1). In addition to a number of environmental factors e.g. obesity, occupation, alcohol intake, salt intake etc., genetic factors also have long been assumed to be important in the genesis of hypertension. From time to time various studies supporting the role of heredity had been published in literature (2, 3). Hypertensive vascular disease which manifest later in life is being implicated to have its origin either in infancy or in early childhood. The incidence of hypertension at an early age has definitely shown a rising trend in children having positive family history of hypertension (4). Many workers have also shown co-relation of hyperlipidemia with early hypertensive heart disease in young individuals (5). Keeping in view all these facts and to add to the already existing data the present study was planned to evaluate Blood Pressure, Serum

Cholesterol, High Density Lipoprotein-Cholesterol on 200 cases in the 2nd and 3rd decade of life in Punjabi Population by the Department of Physiology, Govt. Medical College, Amritsar. The cases were divided into two groups-I and II consisting of 100 cases in each decade. Each group was further divided into two sub-groups Ia and Ib, IIa and IIb, having 50 cases in each group. Cases of group-Ib and IIb were children of hypertensive parents visiting medical outdoor for treatment. Whereas cases of Ia and IIa belonged to children of healthy parents with negative family history of hypertension. In addition to family history of hypertension, detailed history and Physical examination of every case was done to exclude any other disease such as Diabetes mellitus, bleeding disorder etc.. All the tests were done between 9 to 10 AM. Blood pressure of each case was measured in supine position with a mercury sphygmomanometer and a stethoscope following the recommendation of American Heart Association (6). The systolic blood pressure was determined at the point at which the Korotkoffs sounds became audible (Phase-I), whereas diastolic blood pressure was measured at the complete disappearance of the Korotkoffs sounds

TABLE I: Comparison of SBP, DBP, serum cholesterol, high density lipoprotein – cholesterol and total cholesterol/high density lipoprotein – cholesterol ratio between Ia, Ib and IIa, IIb groups.

Group	SBP (mm of Hg)	DBP (mm of Hg)	S-cholesterol (mg/dl)	HDL-C (mg/dl)	Choles/ HDL-C ratio
Group-I 11-20 yrs. (16.28±2.79)					
Ia	109.04±2.46	78.64±3.04	166.49±5.75	51.92±3.29	3.22±0.26
Ib	119.76±6.78	82.96±4.28	209.68±28.02	44.01±8.12	5.04±1.64
Ia vs Ib	t = 7.68 P<0.001 HS	t = 4.54 P<0.001 HS	t = 7.66 P<0.001 HS	t = 4.71 P<0.001 HS	t = 5.54 P<0.001 HS
Group-II 21-30 yrs. (25.36±2.63)					
IIa	118.24±1.76	79.12±2.32	135.15±7.21	48.08±4.08	2.83±0.30
IIb	130.12±8.62	85.48±4.88	223.06±37.49	34.97±8.29	6.79±2.31
IIa vs IIb	t = 6.85 P<0.001 HS	t = 6.21 P<0.001 HS	t = 11.66 P<0.001 HS	t = 7.51 P<0.001 HS	t = 8.57 P<0.001 HS

(Phase-V). The mean of the two consecutive measurements was taken as final reading. Cases having systolic blood pressure of 140 mm Hg or greater and/or diastolic blood pressure of 90 mm of Hg or greater at more than two occasions were labelled as hypertensive (7).

To estimate Serum Cholesterol and High Density Lipoprotein-Cholesterol, 10 ml of blood was withdrawn from antecubital vein of each subject under aseptic conditions. Serum was separated and used for estimation of Serum Cholesterol (8) and Serum High-Density Lipoprotein-Cholesterol (HDL-C) (9). The results were tabulated. (Table I) and comparison of data and significance levels were determined using students 't' test. Our results showed that the systolic blood pressure, diastolic blood pressure, serum cholesterol, serum cholesterol/HDL-C ratio were significantly high and HDL-C was significantly low in

cases of Ib and IIb as compared to Ia and IIa groups respectively, indicating that the cases having positive family history of hypertension are more prone to suffer from high blood pressure and hyperlipidemia as compared to those having negative family history of hypertension. Our results matched with the findings of other authors (3, 4, 10). On further analysis of data (Table-II), it was observed that percentage prevalence of hypertension increased with increase in age in off springs of hypertensive parents. Similar findings had been reported in general population also (11), but siblings

TABLE II: Showing percentage of cases suffering from hypertension in Ib and IIb groups (with positive family history of hypertension).

Group	Total cases	Hyper-tensive	Non-hypertensive	%age of hypertensive
Group-Ib	50	2	48	4%
Group-IIb	50	15	35	30%

of hypertensive parents develop hypertension at much younger age as compared to general population.

The goal of early identification of blood pressure elevation and hyperlipidaemia is to minimize the hypertensive damage to heart as well as to prevent premature

coronary artery disease. It also helps in preventing damage to other vital organs due to above-mentioned factors. Therefore for early detection of hypertension it is essential that screening of children having positive family history of hypertension must be done as a routine measure.

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REFERENCES

- Nayler WG. Vascular Injury: Mechanisms and manifestation. *Am J Med* 1991; 25: 85-135.
- Mekusic VA, Mendelian inheritance in Man, Baltimore: John Hopkins University Press, 1975; 182-183.
- O'Hare JP, Walker WG, Vickers MC. Heredity and Hypertension. *JAMA* 1924; 1: 27.
- Platt R. The influence of heredity. In Stamler J, Stamler R, Pullman TN (eds.) Epidemiology of Hypertension, New York: Grune and Stratton, 1963.
- Heldenberg D, Tawir I. Lipoprotein measurements—a necessity for precise assessment of risk in children from high-risk families. *Arch Dis Child* 1979; 54: 595-698.
- Kirkendall NM, Burton AC, Epstein FH, Freis ED. Recommendations for human blood pressure determination by sphygmomanometers: report of a sub-committee of postgraduate education committee, American Heart Association. *Circulation* 1967; 36: 980-988.
- The Sixth Report of the Joint National Committee on Prevention, Detection, education and treatment of high blood pressure. *Arch Int Med* 1997; 157: 2413-2446.
- Zlatkis A, Zak B, Boyle GJ. A new method of determination of serum cholesterol. *J Lab Clin Med* 1953; 41: 486.
- Burstein M, Scholick HR, Mortin RJ. Rapid method of isolation of lipoproteins from human by precipitation with polyanions. *J Lipid Re* 1970; 11: 583.
- Khanna A, Srivastava S, Karmerkar M, Tandon R and Ghai OP: Preliminary observation the early detection of hyperlipidaemic and hyperlipoproteinaemia in children of high risk families. *Ind Paed* 1979; 16: 313-316.
- Mensan GA, Pappas TW, Koren MJ, Ulin RRJ. Comparison of classification of the severity of hypertension by blood pressure level and by World Health Organisation. Criteria in prediction of concurrent cardiac abnormalities and subsequent complications in essential hypertension. *J Hypertension* 1993; 11: 1429-1440.