

The modifiable risk factors of hypertension in youths

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Abstract

Objective: To verify the modifiable cause(s) of hypertension in youths.

Method: It is a prospective observational study, it was done in out patient private clinic in Kerbala city during the period between May 2004 and October 2006 .three hundred and fifty persons were included, the ages of all persons ranged between 20 and 35years, but 236 were hypertensive and 114 were normotensive.The main parameters that were studied included; body mass index (BMI) ,total serum cholesterol and smoking.

Results: All the hypertensive patients belong to families with history of hypertension, 80.5% of them were hypercholesteremic, 64.4% were obese and 53.8% were smoker. On the other side, only 21% of the persons of the normotensive group belonged to families with hypertension, none of them were obese, but 7.9% were hypercholesteremic and 13.1% were smoker.

Conclusion: hypercholesteremia, obesity and smoking are a modifiable causes of hypertension in youth. Early recognition, education and treatment of hypercholesteremia plus weight reduction and cessation of smoking may prevent or reduce the severity of hypertension and hence its hazardous complication later on.

Key words: hypertension, hyperlipidemia, obesity, smoking, Kerbala.

Introduction

Hypertension is a medical condition in which the arterial blood pressure is chronically elevated⁽¹⁾. Hypertension can be classified as essential (primary) or secondary. Essential hypertension indicates that no specific cause can be found to explain a patient condition. Persistent hypertension is one of the risk factors for stroke, coronary heart diseases, heart failure and arterial aneurysm and is the leading cause of chronic renal failure. Even moderate elevation of arterial pressure lead to shortened life expectancy⁽²⁾. Hypertension is considered to be present when a persistent systolic blood pressure is consistently 140mmHg or greater and/or their diastolic blood pressure is consistently 90mmHg or more⁽⁴⁾. Since the hypertension is common and serious and since the youths represent a large sector of the population in developing countries including Iraq, I did this study.

METHOD

Two hundred and thirty six newly diagnosed hypertensive patients of age 20-35 years were attending private out patient clinic at Kerbala city during the period between May 2004 and October 2006, this group was regarded as the first group, another group (the second group) composed of 114 persons of the same age group but they were normotensive. All the persons of the two groups provided medical information according to questionnaire designed for the

study purpose. thorough history and physical examination were performed for all. The blood pressure were measured twice (for each person) after 10 minutes of rest at sitting position by using standard mercurial sphygmomanometer. The 350 persons were investigated by fasting blood glucose ,fasting serum cholesterol ,serum creatinin,blood urea ,general urine examination and E.C.G. .The results were significant if the P value<0.01.

RESULTS

One hundred and forty eight patients of the first group were male(62.7%) and 88 (37.3%) were female compared with 72 (63.1%) were male and 42 (36.9%) were female in the second group .One hundred and fifty two were obese (BMI>30%Kg/m²) . The body mass indices of the first group were ranging between 28% and 37% (mean 31.9%Kg/m²) compared with 19.6-27% (mean 24.3%) of the second group (P value <0.001). The body mass indices of male and female in the first group near similar (66.2% ,61.3% respectively).In the first group 127 patients (53.8%) were smokers compared with 15 patients(13.1%) were smokers in the second group (P value < 0.01). Hypercholestremia was recorded in 190 patients in the first group (80.5%) compared with 9 (7.9 %) patients in the second group,(P value <0.01) .All male patients in the first group were hypercholestremic compared with 42 (36.8 %) female. All patients of the first group belong to families have hypertension compared with 24 (21%) patients of the second group. No one of the patients was diabetic. Blood urea, serum creatinin,general urine examination were normal. The E.C.G. revealed evidences of left ventricular hypertrophy in 17 patients of the first group (based on RaVL + SV3 > 25mm in men and 20mm in women).

DISCUSSION

As the hypertension is one of the common medical problems and because the percentage of youth in the developing countries including Iraq is high and because the hypertension can be asymptomatic so there is a great chance of hypertension's hazards to express and for this reasons among others I studied the expected modifiable risk factors of hypertension.

The smoking is not a risk factor of hypertension ⁽¹⁰⁾ ,this is not consistent with the result of this study !,but can we find an

explanation ? the understanding of mechanisms through which the smoking exert its effect may enable us to say that smoking is a cause of hypertension at least indirectly. Smoking increases heart rate due to nicotine which indirectly increases blood pressure transiently, also it reduces nitric oxide release and impairs vasodilatation owing to endothelial damage and dysfunction, moreover, smoking increases the peripheral vascular resistance through stiffing the vascular wall due to premature atherosclerosis that result from increase LDL .Smoking can enhance coagulability by increasing fibrinogen and also causes hyper viscosity secondary to chronic hypoxia, both of which can impair renal blood supply that promote rennin release^(8,9,10). This conclusion is supported by Omvik P⁽⁵⁾ and Fogari R⁽⁶⁾.

Obesity has a role in the initiation of hypertension through; expanded plasma volume and sympathetic over activity (the sympathetic over activity is thought to be compensatory attempt to burn fat but at the expense of peripheral vascular resistance, renal salt and water retention and hypertension⁽⁹⁾, the obese patients are vulnerable sleep apnea that result in repeated arterial desaturation that sensitizes the carotid body chemoreceptor causing sustained sympathetic over activity^(9,8,10)). The above mentioned information represent a logic explanation to the finding of the study. Studies indicated that, for obese patients with NIDDM, hypertension or hyperlipidemia, modest weight reduction appeared to improve glycemic control, reduce blood pressure, and reduce cholesterol levels, respectively. Modest weight reduction also appeared to increase longevity in obese individuals.⁽³⁾

Hyperlipidemia in particular LDL causes premature atherosclerosis that lead to stiffness of the arterial wall which in turn increases the peripheral vascular resistance on one side and rennin release owing to renal hypo perfusion(atherosclerotic type) on the other side^(8,7,9,10), and this consistence with the results of the study.

	Hypertensive group	Normotensive group	P value
BMI > 30	152	Nil	< 0.001
Smoker	127	15	< 0.01
Hypercholestermia	190	24	< 0.001
Family history	236	8	< 0.001

Conclusion

Hypercholestermia, obesity and smoking are a modifiable causes of hypertension in youth. Early recognition, education and treatment of hypercholestermia plus weight reduction and cessation of smoking may prevent or reduce the severity of hypertension and hence its hazardous complication later on.

References

1. Medical dictionary of hypertension from KMLE medical dictionary.
2. Text book of medical physiology, 7th ed., Gyton and Hall, Elsevier-Saunders.
3. DJ Goldstein-int j obese Relate disorder, 1992-ncbi-nlm-nih.gov (Beneficial health effect of moderate weight loss).
4. JNC 7th report "JAMA 289: 2560-2572".
5. Omvik P. How smoking affect blood pressure 1996 ; 5 :71-7 (Medline).
6. Fogari R, Zoppi A, Lusardi P, Marasi G, Villa G, Vanasia A. Cigarette smoking and blood pressure in a work population. Jcardiovasc.Risk 1996; 3: 55-9 (Medline).
7. BMI is a good predictor of hypertension and hyperlipidemia in a rural Japanese population. International Journal of obesity (2002) 26, 725-729.
8. Davidson`s principles and practice of internal medicine; 20th ed.
9. Cecil text book of medicine ; 22nd ed.
10. Harrison`s principles of internal medicine ; 14th ed .