Analysis of disease spectrum of corporate executives after physical examination

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Abstract

Introduction: To find out the disease spectrum of corporate executives and screen the common chronic diseases.

Methods: The physical examination data of corporate executives were collected to carry out cross-sectional study.

Results: Among 231 subjects, there were one hundred and ninety four males, which made up 85.3%, and thirty seven females, which made up 14.7%. The detection rate of chronic diseases in corporate executive was high. Specifically, the incidence rate of blood viscosity rise was 87.8%; the incidence rate of blood lipid rise was 79.5%; the incidence rate of obesity and overweight was 76.7%; the infection rate of Helicobacter pylori was 55.7%; the prevalence rate of fatty liver was 52.1%; the prevalence rate of kidney stones was 43.5%; the incidence of abnormal pancreatic echo was 52.3%; the incidence rate of abnormal TCD was 66.2%; the detection rate of coarse gallbladder wall was 35.5%. The prevalence rate of bone mineral density reduction was 39.6%; the detection rate of reduction of diastolic function of left ventricle was 37.5%; the incidence rate of raised serum uric acid was 28.6%; the incidence rate of blood glucose going up was 22%; the incidence rate of liver cyst was 19.5%. The prevalence rate of blood LDL rise was 23.9%; the prevalence rate of abnormal thyroid was 21.3%; the incidence rate of arteriosclerosis was 17.5%; the prevalence rate of hypertension was 17.4%.

Conclusion: The corporate executives are high risk group of common metabolic diseases and cardiovascular and cerebrovascular diseases. Therefore, screening should be strengthened for them.

Keywords: Corporate executive; Physical examination; Chronic diseases; Survey

Introduction

Disease spectrum refers to the spectrum of various diseases arranged in the order of hazard degree and harmful for human health in a certain region. The disease spectrum varies with location and population. The investigation of disease spectrum is useful for relevant departments in implementing measures for diseases prevention targetedly. The national survey of disease spectrum in 2008 showed that, the top 3 diseases in the national disease spectrum were malignant tumor, heart disease, and cerebrovascular diseases; the top 3 in disease spectrum of inpatients were circulatory system disease, injury, toxicosis and tumor (1). High work pressure, imbalanced nutrition, and lack of physical exercise for long pervasively existed in white collars. For the purpose of understanding the health status of white collars and preventing the harm arising from chronic diseases particularly in an early stage, an analysis of the disease spectrum of corporate executives after physical examination was conducted in the study.

Methods

Research subjects

231 corporate executives from one state-owned enterprise; 194 male, and 37 female, aged averagely about 48.1±10.1 years. The 231 corporate executives all accepted the physical

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Submitted 10. April 2011 / Accepted 20. September 2011

TABLE 1. Constitution of the subjects gender and age

Age	Male		Female		Sum	
(year)	Number	%	Number	%	Number	%
<30	3	1.5	1	2.7	4	1.7
30~	10	5.2	4	10.8	14	6.1
40~	76	39.2	18	48.7	94	40.7
50~	95	49.0	11	29.7	106	45.9
60~	8	4.1	1	2.7	9	3.9
70~79	2	1.0	2	5.4	4	1.7
Sum	194	100	37	100	231	100

examination at the Physical Examination Center, Taihe Hospital Affiliated to Hubei Medical University from April 15th to May 30th of 2009.

Research methods and contents

Statistical analysis was conducted on results of their ages, genders, body mass index, blood pressure, blood lipid, blood glucose, serum uric acid, liver, Type-B ultrasonic examination of thyroid, ultrasonic transcmnial Doppler(TCD), bone mineral density examination, helicobacter pylori examination, etc.. Index of anthropometry: height and weight measurement, calculation of the body mass index (BMI), and measurement of artery blood pressure at the top right cantilever was conducted. Venous blood was collected after fasting for 8 to 10 hours to detect triglyceride (TG), high density lipoprotein cholesterol (HDL-C), low density lipoprotein cholesterol (LDL-C), and serum uric acid (UA) using Enzyme method (Japanese Hitachi 7170A Automatic Analyzer). The fasting blood-glucose (FBG) was detected by glucose oxidase method. Type-B ultrasonic examination: Three attending physicians with imageology expertise used PHILIPS Color Doppler Ultrasonic Device (extraordinary type, 3.5 Hz frequency of ultrasonic probe) to conduct Doppler ultrasonic examinations of liver, gallbladder, pancreas, kidney, and thyroid. Detection by transcranial Doppler (TCD): The transcranial Doppler Type TCD2020 of German EME Company with 2 MHz frequency of ultrasonic probe was used to detect the maximum blood flow velocity, minimum blood flow velocity, average blood flow velocity and resistance index of the anterior, middle and posterior artery of left and right cerebral hemispheres, through temporal window and pulvinar window. The mean value of the artery of left and right cerebral hemisphere was used in statistical analysis. Japanese OMRON Arteriosclerosis Detector was used to detect the degree of arteriosclerosis.

Diagnostic standards

- According to the diagnostic standards of WHO in 1999, when BMI<18.5kg/m^2, the subject is considered to be relatively thin; when 18.5kg/m^2≤BMI<23.9kg/m^2, the subject is considered as normal; and when BMI≥24kg/m^2, the subject is considered as overweight.
- According to Guidelines for Prevention and Treatment of Hypertension of China in 2004, subjects with twice systolic pressure (SBP) ≥140mmHg and twice diastolic pressure (BDP) ≥90mmHg and/ or those diagnosed as hypertension and accepted treatment are hypertensive patients.
- According to Guidelines on Prevention and Treatment of Blood Lipid Abnormality in Chinese Adults (2): when TG≥2.26mmol/L, the subject is abnormal; if LDL-C≥4.14mmol/L, the subject is abnormal; and if LDL-C≤1.04mmol/L, the subject is abnormal.
- Male subjects with UA>420ummol/L or female subjects with UA>350ummol/L are diagnosed as patients with high serum uric acid..
- Ultrasonic diagnostic standards of fatty liver (3): 1) mild or moderate liver hyperplasia with smooth surface; 2) the intrahepatic echo is magnified, with the front half fine and intense, which varies like clouds; and the strength of echo decreases from the surface to the depth of liver, even undetectable in the depth under normal sensitivity; 3) most of the intrahepatic blood vessels are hard to be display.

Statistics analysis

SPSS16.0 software was used to conduct statistics analysis, and χ^2-test was used for single factor analysis. The difference with P <0.05 was of certain statistical significance.

Results

The constitution of the gender and age of the subjects was shown in Table 1. Among the subjects, there were 194 males, amounting to 85.3%, and 37 females, amounting to 14.7%; subjects of 40 to 60 years accounted for 88.2% of all the subjects.

TABLE 2. Disease Spectrum of Corporate Executives

Disease	Male			Female			Sum			
	Number of Subjects	Positive Number	Positive rate(%)	Number of Subjects	Positive number	Positive rate(%)	Number of subjects	Positive number	Positive rate(%)	p
Obesity and overweight	142	118	83.1	25	10	40	167	128	76.7	<0.05
Fatty liver	144	79	54.9	25	9	36	169	88	52.1	>0.05
Helicobacter pylori	135	74	54.8	23	14	60.9	88	158	55.7	□0.05
Kidney stones	145	70	48.3	23	3	12	168	73	43.5	<0.05
Abnormal echo in pancreas	144	62	43.1	24	6	25	168	88	52.3	>0.05
Abnormal TCD	57	37	64.9	11	8	72.7	68	45	66.2	>0.05
Coarse gallbladder wall	144	55	38.2	25	5	20	169	60	35.5	>0.05
Abnormal bone mineral density	122	48	39.3	12	5	41.7	134	53	39.6	<0.05
Left ventricular diastolic function	127	49	38.6	9	2	22.2	136	51	37.5	>0.05
High blood viscosity	40	36	90	9	7	77.8	49	43	87.8	>0.05
Raised serum uric acid	143	47	32.9	25	1	4	169	48	28.6	<0.05
Enlargement of male prostate	128	39	30.5	——	——	——	128	39	30.5	
Blood glucose rise	143	34	23.8	25	3	12	168	37	22	>0.05
Hepatic cyst	144	30	20.8	25	3	12	169	33	19.5	>0.05
Blood LDLrise	127	31	24.4	11	2	18.2	138	33	23.9	>0.05
TG rise	35	29	82.9	4	2	50	39	31	79.5	>0.05
Hypertension	142	27	19	25	2	8	167	29	17.4	>0.05
Thyroid disease	127	28	22.1	9	1	11.1	136	37	21.3	>0.05
Arteriosclerosis	135	26	19.1	24	2	8.3	159	28	17.5	>0.05

Disease spectrum of subjects

It can be seen from Table 2 that, the detection rate of chronic diseases in corporate executive was high: the incidence rate of blood viscosity rise was 87.8%; the incidence rate of blood lipid rise was 79.5%; the incidence rate of obesity and overweight was 76.7%; the infection rate of Helicobacter pylori was 55.7%; the prevalence rate of fatty liver was 52.1%; the prevalence rate of kidney stones was 43.5%; the prevalence rate of abnormal echo in pancreas was 52.3%; the incidence rate of abnormal TCD was 66.2%; the incidence rate of coarse gallbladder wall was 35.5%; the prevalence rate of bone mineral density reduction was 39.6%; the incidence rate of reduction of left ventricular diastolic function was 37.5%; the incidence rate of raised serum uric acid was 28.6%; the incidence rate of blood glucose rise was 22%; the incidence rate of liver cyst was 19.5%; the prevalence rate of blood LDL rise was 23.9%; the prevalence rate of abnormal thyroid was 21.3%; the prevalence rate of arteriosclerosis was 17.5%; the prevalence rate of hypertension was 17.4%; and the prevalence rate of enlargement of male prostate was 30.5%.

Difference in disease spectrum of the subjects of different gender

Compared with the female subjects, the male subjects were more prone to obesity and overweight, kidney stones, serum uric acid, fatty liver, abnormal echo in pancreas, coarse gallbladder wall, reduction of left ventricle diastolic function, hepatic cyst, thyroid examination, arteriosclerosis, blood viscosity rise, LDL, serum triglyceride, and abnormal blood glucose. The difference in overweight and obesity, kidney stone, serum uric acid be-

tween male and female subjects had statistical significance. The female had higher rates of abnormal bone mineral density, positive helicobacter pylori, and abnormal TCD than that of the male, and the difference in the rate of abnormal bone mineral density between them had statistical significance.

Discussion

The 2002 national nutrition survey showed that (1), the incidence of adult chronic disease rose apparently compared with that of 1992. The incidence of hyperlipaemia was 18.6%, with 160 million patients, while the rate of adult overweight was 22.8%, and obesity rate was 7.1%, with 200 million and 60 million patients respectively. The incidence of adult hypertension was 18.8%, with 160 million patients; the incidence of adult glycuresis was 9.7%, and the prevalence was 2.6%, with over 20 million patients. The prevalence of diabetes of the adults over the age of 20 in Beijing was 10.16%, and that of early phase glycuresis was 11.19%; and the prevalence of metabolic syndrome was as high as 20.39%. According to the results of this examination, the abnormal rates of various examination results of corporate executives were between 17.4% and 87.8%, with hypertension of the lowest abnormal rate and blood viscosity rise of the highest abnormal rate. The incidence rates of blood viscosity rise, positive helicobacter pylori, abnormal echo in pancreas, positive TCD, and blood lipid rise were all above 50%. The disease with the highest incidence was blood viscosity rise, with blood lipid rise, overweight, obesity, and abnormal TCD followed. A national survey showed that endocrine and metabolic diseases ranked the fifth in disease spectrum. And this survey also indicated that the blood viscosity of corporate executives was 87.8%, far beyond that of public servants as 19.6% (4); the incidence of blood lipid rise was as high as 79.5%, which was also much higher than that of public servants as 18.6%; the incidence of blood glucose rise was 22%, higher than that of residents as 5.23% (5,6) as well as that of public servants as 10.5%; the incidence of fatty liver reached 52.1%, significantly higher than that of other populations as teachers(29.3%) (7); the positive rate of kidney stones was 43.5%, greatly higher than that of the populations as 4.87% (8) ; and the overweight and obesity rates were 76.7%, greatly higher than that of the populations as 22.8% (1,9). Incrassation and sclerosis of vascular intima could be "sensed" by TCD at pathologic phases of mild, moderate and severe vascular stenosis, and the nature, position, degree, scope and prognosis of cerebrovascular diseases can be "predicted" or reported in real time so as to provide accurate diagnosis for the patients. The arteriosclerosis detector can detect cardiovascular and cerebrovescular diseases at an early period. In this survey, the positive rates of TCD and arteriosclerosis were 66.2% and 17.5%, respectively, which indicated that the incidence of chronic diseases, especially the metabolic diseases and cardiovascular and cerebrovascular diseases, were significantly higher than those of the general populations. In 2008, Chinese Diabetes Society conducted a survey over the incidence status in fifteen cities and districts across the whole country (10), and discovered that the incidence of Chinese diabetes was 9.7%. According to the relevant estimate, there were about 92.4 million Chinese diabetes patients, and the diabetes incidence increased rapidly among the business men of 30 to 45 years old. Such research results show that, the corporate executives are the high risk group of chronic diseases, which may be in relation to their high work pressure, intensive social activities, and lack of exercises. Therefore, it is necessary to strengthen the examination of chronic diseases of corporate executives, especially metabolic diseases, such as obesity, fatty liver, diabetes, and gout; and at the same time, screening of their cardiovascular and cerebrovascular disease requires more attention. It is worthy to note that, the positive rate of thyroid disease was 21.3% in this survey, while the incidence of thyroid nodule was 18.6% according to the epidemiology survey result of national thyroid disease. The reasons for such thyroid disease include the lack of iodine, excessive iodine, and immunological factors. The cause for the high positive rate of thyroid disease of corporate executives was not clear. The study indicates that corporate executives are the high risk group of metabolic diseases and cardiovascular diseases based on the analysis of disease spectrum of corporate executives after physical examination, and provides the foundation to determine the keys in prevention and treatment of chronic diseases of corporate executives.

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