

Lipid Profile and Blood Glucose Level of Hypertensive Population in Rural Regions of West China.

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Research

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Abstract

Background: In rural regions of West China, there was almost no intervention on dyslipidemias and abnormal glucose metabolism of individuals with hypertension because of no literature reporting the lipid profile or blood glucose of these patients. This study was designed to investigate the lipid profile and blood glucose level of the hypertensive population in these regions.

Methods: A cross-sectional community survey was carried out in Xunyi county of Shaanxi province in West China. The study enrolled 1425 hypertensive patients. The lipid profile and blood glucose levels were assessed. Diet and physical activity were also investigated by questionnaire.

Results: 54% of the population had dyslipidemias. The hypercholesterolemia (hyper-TC) and hypertriglyceridemia (hyper-TG) were the main dyslipidemias (hyper-TC:25%; hyper-TG: 33%). The prevalence of abnormal glucose metabolism was 37%. 16% of the population had hyperglycemia. Despite of low-fat intake, the diet was unbalanced by excess salt consumption and seriously insufficient intake of vegetables, fruits and protein.

Conclusion: Dyslipidemias and abnormal glucose metabolism were common in the hypertensive patients in rural areas of West China. They were needed to be invented to reduce the risks of atherosclerotic cardiovascular diseases of hypertensive patients in these regions. Unbalanced diet here may be needed to be modified.

Full Text

Due to technical limitations, full-text HTML conversion of this manuscript could not be completed. However, the latest manuscript can be downloaded and [accessed as a PDF](#).

Tables

Table 1 Characters and anthropometric measurement of the studied hypertensive population

Variables		
Total		1425
Gender		
	Men	599(42%)
	Women	826(58%)
Age(years)		62.6± 8.2
Height(cm)		158.1± 8.2
Body weight(kg)		61.1± 10.2
BP*(mmHg)		
	SBP	153±21
	DBP	93±13
BMI		24.4±3.5
WC [#] (cm)		83.4±9.8
Obesity		
	Overweight by BMI	535(36%)
	Obesity by BMI	200(14%)
Central obesity		
	by WC	539(38%)

BP* Blood pressure; SBP: Systolic blood pressure; DBP: Diastolic blood pressure; WC[#] waist circumference

Obesity is determined by BMI ≥ 28 according to Chinese BMI cut points. Central obesity is determined by WC ≥ 90 cm for men and ≥ 85 cm for women according to Chinese cut points of WC. The prevalence of obesity was only 16% by BMI, but that of central obesity was 53% by WC.

Table 2 Lipid profile of the hypertensive patients

	Total	Men	Women
N	1425	599	826
Serum lipid (m± SD,mmol/L)			
TC	4.60±0.96	4.39±0.87	4.75±1.00
LDL-c	2.53±1.07	2.43±1.08	2.60±1.06
HDL-c	1.41±0.40	1.34±0.34	1.45±0.44
TG	1.60±1.00	1.46±0.95	1.69±1.02
Patients with dyslipidemias(N, %)	774(54%)	284(47%)	490(59%)
hyper TC	360(25%)	100(17%)	260(31%)
hyper LDL-c	159(11%)	46(8%)	113(14%)
hypo HDL-c	210(15%)	107(18%)	103(12%)
hyper TG	470(33%)	163(27%)	307(37%)

Lipid profile was assessed in the studied hypertensive patients. Dyslipidemias were very common (54%). Hyper-TC and hyper-TG were the main dyslipidemias. The prevalence of dyslipidemias was higher among women.

Table 3 Fasting blood glucose levels of the hypertensive patients

	Total	Men	Women
N	1395	587	808
FBGI (m± SD,mmol/L)			
Patients with abnormal glucose metabolism(N, %)	517(37%)	209(36%)	308(38%)
By FBG			
6.1-<7	294(21%)	112(19%)	182(22%)
≥7	223(16%)	97(17%)	126(16%)

FBG: fasting blood glucose level

The abnormal glucose metabolism ($\text{FBG} \geq 6.1 \text{ mmol/L}$) was common. It's prevalence was 37%. In addition, 16% of the population had hyperglycemia ($\text{FBG} \geq 7.0 \text{ mmol/L}$).

Table 4 Diet of the studied hypertensive population

Food category	Intake	Percent	Recommendation*
Carbohydrates #			250-400g/d
	<250g/d	35.88%	
	250-500g/d	47.33%	
	>500g/d	16.79%	
Meat			50-75g/d
	<50g/d	82.20%	
	≥50g/d	17.80%	
Vegetables			300-500g/d
	<300g/d	59.01%	
	≥300g/d	40.99%	
Fruits			200-350g/d
	<100g/d	63.40%	
	100-200g/d	33.86%	
	>200g/d	2.74%	
Eggs			280-350g/w
	<280g/w	83.50%	
	≥280g/w	16.50%	
Oil #			750-900g/m
	<500g/m	49.35%	
	500-1000g/m	40.27%	
	>1000g/m	10.38%	
Salt			6g/d
	≤360 g/m	1.30%	
	>360/m	98.70%	
average	23.5±17.3g/d		
Salty pickles such as pickles, soy sauce			
	yes	75.65%	
	no	24.35%	

N=1388. Recommendation*: intake recommended by China's dietary guidelines(2016)

#: The residents are used to weighing by *Jin*. 1 *Jin* = 500g. Therefore, in order to be easy to estimation, 250g, 500g and 1000g were used in the questionnaire to measure the intake of carbohydrates and oil.

The diet was very unbalanced despite of low fat intake. Seriously insufficient intake of protein(meat, egg), vegetables and fruits while salt intake was too much.

Figures

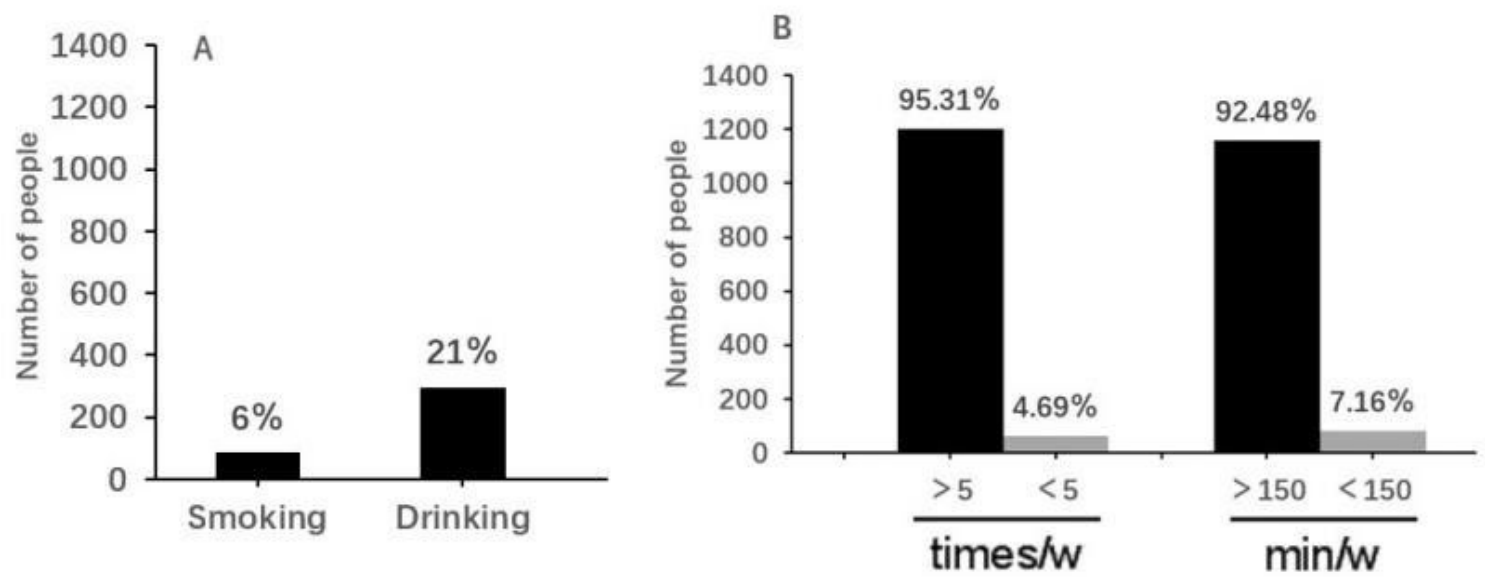


Figure 1

Health habit of the studied hypertensive population N=1388. A: There were few patients with drinking, and only a small number of the patients with smoking (21.47%). B: Most of the patients had enough physical activity (≥ 5 times/week ,95.31%; ≥ 150 min/week, 92.84%).