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A survey on the relationship between alcohol drinking and liver function test

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Abstract

A survey on alcohol drinking and liver function test was conducted on inhabitants in the H district of Osaka in order to find ways to promote primary protection for health care.

In general, inhabitants in the H district consume more alcohol than the average for Japan. The results showed that with an increased in alcohol consumption, there was an increase in the number of inhabitants showing abnormal values for liver function. Habitual alcohol consumption was higher for males but an increasing tendency was noted for females. The present findings should be useful for planning programs to improve alcohol consumption habits.

Key words : alcohol consumption, liver function test

Introduction

The Japanese national health survey of fiscal 1999 revealed habitual alcohol consumption for 52.7% of the men and 8.1% of the women. From the age aspect, more than 60% of the men of aged 40-50 years consume high quantities of alcohol and women, working outside of the home, have increasing chances to drink alcohol. Excessive alcohol consumption can lead to various diseases. It can be a great burden to the family and also cause serious health problems. While the danger of myocardial infarction can be reduced by a small amount of alcohol consumption. The chances of liver diseases increase as the amount increases. In addition, if alcohol drinking is combined with smoking, the chances for such diseases synergistically increase. Thus, WHO reports that good health can be promoted by reducing alcohol consumption (Association of health protection, 2001).

In Japan, the formation of a good health program for the 21st century has been proposed. It induces the following targets for alcohol consumption : (1) reduce the number of people who drink heavily (60g pure alcohol per day), i. e. from 4.1% to 3.2% for men and from 0.3% to less than 0.2% for women ; (2) eradicate juvenile drinking ; (3) promote the spread of recommendations for appropriate drinking, i. e. not more than 20g pure alcohol per day.

We studied the relationship between the amount of alcohol consumption and values of liver function test, in relation to gender and age of inhabitants in the H district, Osaka, based on individual inquiry cards on their general health. The results of the present survey should serve as the basis for planning a program to encourage people to appropriately control their alcohol consumption.

Subjects and methods

The subjects were 700 men and 1,330 women, 40–90 years old, living in the H district, who had the health examinations during the period of January to December, 1998. The amount of alcohol consumed and γ -GTP, GOT and GPT values were examined in relation to age and gender. They were divided into four depending on the amount of alcohol consumed: (1) group 1: no consumption, (2) group 2: small amount or occasional consumption, (3) group 3: 180–360ml of Japanese Sake or other drinks containing the equivalent pure alcohol per day, and (4) group 4: drinking 3 bottles of beer or 3 double glasses of whisky or other drinks containing the equivalent pure alcohol a day or more.

Results

1. Amount of alcohol consumption vs. gender and age

A total of 700 men and 1,330 women took the health examination with the number of women 50s and 60s being more than twice the number of men in the same age range (Table 1).

With respect to gender, the largest number of men was in group 3, 229 out of 700(32.7%), followed by group 2, 214 (30.6%), group 1, 199(28.4%), group 4, 58 (8.3%). The largest number of women was in group 1, being 862 out of 1,330 (64.8%), followed by group 2, 407(30.6%), group 3, 51(3.8%), and group 4, 10(0.8%). Alcohol consumption with respect to gender and age is presented in Fig. 1 and Table 2 for men.

Men in their 40s and 50s consumed alcohol the most, similar to group 3 and the number of those of the 40s in group 4 was 18 out of 140(12.8%). For men in their 60s, the largest number was in group 3 followed by group 1. In the group 3, the highest alcohol drinking rate for men was for those for their 60s, being 84 out of 238(35.3%). For higher ages the amount of alcohol drinking tended to decrease (Table 2).

Women of all age ranges showed the same alcohol consumption tendencies as the whole group. Women in the 40s in group 4 accounted for 5 out of 235 (2.1%) and the amount of alcohol consumption tended to decrease as women aged.

2. Relationship between the amount of alcohol consumption and liver function test

Blood examination items used to check liver function were the leaking enzymes GOT and GPT, which are

Table 1 Data on survey; subjects, gender and age

	40s	50s	60s	70s	80s	90s	total
men	140	193	238	111	18	0	700
women	235	463	494	120	17	1	1,330
total	375	656	732	231	35	1	2,030
#	9,561	9,956	8,343	3,739	1,615		33,214
##	9,846	10,944	9,554	6,283	3,463		40,090
###	19,407	20,900	17,897	10,022	5,078		72,304

Population of men in H district in 1998
 ## Population of women in H district in 1998
 ### Total population in H district in 1998

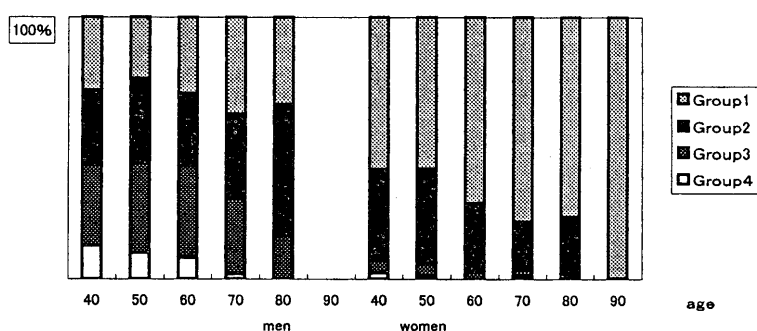


Fig. 1 Amount of alcohol consumption vs. age of men and women

Table 2 Amount of alcohol consumption vs. age range of men

	40s	50s	60s	70s	80s	90s	total (%)
group 1	38	45	69	41	6	0	199 (28.4)
group 2	41	62	66	36	9	0	214 (30.6)
group 3	43	67	84	32	3	0	229 (32.7)
group 4	18	19	19	2	0	0	58 (8.3)
total	140	193	238	111	18	0	700 (100.0)

indices of the degree of liver disturbance, and γ -GTP which is the enzyme for judging the liver and biliary tract disorder and alcohol drinking.

1) GOT (Table 3)

No difference in the average value of GOT was found among the alcohol drinkers, either male or female regardless of the amount of alcohol consumed. Four out of nineteen (21.1%) men in their 50s in group 4 showed GOT values above normal (10–40 U/l). Many of the others showed values within the normal range for GOT.

Table 3 GOT values vs. the amount of alcohol consumption and gender

	gender	N	normal (%)	abnormal (%)	average (SD)
group 1	male	199	184 (92.5)	15 (7.5)	25.4 (10.2)
	female	862	824 (95.6)	38 (4.4)	23.5 (13.5)
group 2	male	214	206 (96.3)	8 (3.7)	24.9 (9.5)
	female	407	396 (97.3)	11 (2.7)	22.9 (9.4)
group 3	male	229	209 (91.3)	20 (8.7)	28.0 (11.9)
	female	51	48 (94.1)	3 (5.9)	24.1 (7.5)
group 4	male	58	48 (82.8)	10 (17.2)	31.3 (12.2)
	female	10	10 (100.0)	0 (0.0)	23.5 (6.2)

normal value: 10–40IU/l

2) GPT (Table 4)

No significant change due to gender was found in the value of GPT among men and women. However, ten out of forty-one (24.4%) men in their 40s in the group 2 showed GPT values above normal (8–44 U/l). Many of the others showed normal GPT values.

Table 4 GPT values vs. the amount of alcohol consumption and gender

	gender	N	normal (%)	abnormal (%)	average (SD)
group 1	male	199	178 (89.4)	21 (10.6)	26.8 (18.3)
	female	862	824 (85.6)	38 (11.4)	20.1 (26.0)
group 2	male	214	197 (92.1)	17 (7.9)	25.3 (19.2)
	female	407	394 (96.8)	13 (3.2)	18.7 (12.0)
group 3	male	229	203 (88.6)	26 (11.4)	26.6 (15.7)
	female	51	50 (98.0)	1 (2.0)	19.0 (9.2)
group 4	male	58	52 (89.7)	6 (10.3)	27.0 (14.6)
	female	10	10 (100.0)	0 (0.0)	18.7 (9.0)

normal value: 8–44IU/l

3) γ -GTP (Table 5)

Higher γ -GTP values showed a correlation with increased alcohol consumption for both men and women. About 70 % of the men in group 4 showed γ -GTP values above normal (0–50 U/l). The highest values were those for 15 out of 19 (78.9%) in group 4. Four of the eleven (36.4 %) women in their 40s in group 3 showed the highest γ -GTP values. In group 4 one woman in the 40s and 50s each showed the γ -GTP value above normal.

Table 5 γ -GTP values vs. the amount of alcohol consumption and gender

	gender	N	normal (%)	abnormal (%)	average (SD)
group 1	male	199	168 (84.4)	31 (15.6)	34.2 (23.0)
	female	862	798 (92.6)	64 (7.4)	26.0 (28.2)
group 2	male	214	164 (76.6)	50 (23.4)	42.5 (35.8)
	female	407	358 (88.0)	49 (12.0)	30.5 (29.9)
group 3	male	229	119 (52.0)	110 (48.0)	79.3 (122.8)
	female	51	42 (82.4)	9 (17.6)	50.8 (95.4)
group 4	male	58	17 (29.3)	41 (70.7)	132.9 (125.3)
	female	10	8 (80.0)	2 (20.0)	61.2 (66.9)

normal value: 0–50IU/l

Discussion

Our data led to the following conclusions.

1. Alcohol consumption in relation to gender and age

More habitual alcohol consumption was noted for men and women of all ages in comparison with the findings of a national nutrition examination in 1998. The percentage of men in their 40s in group 4 was 12.8% in comparison with 9.8% national average (The Study Circle for Health and Nutrition Information 2000).

In Japan, sociable consumption of alcohol is favorably considered. This may be related to the finding of habitual consumption by men in all age ranges. Although much fewer women showed such a habit, an increasing trend was

noted as women have started to work outside of the home. Special attention should be directed to informing women about how alcohol drinking can affect them and their children during pregnancy and breast feeding even these data are of aged women.

2. Habitual alcohol consumption and its countermeasures

Tanaka et al. (1995) pointed out that liver diseases were increasingly found in adults of increasing age, with many suffering from fatty liver and hepatitis. Women are more sensitive to alcohol and tend to suffer from serious liver diseases (Shimanaka, 2000). Therefore, special attention should be paid to women's liver diseases, such as hepatitis and liver cirrhosis caused by alcohol.

Excessive alcohol consumption can cause or aggravate many diseases, including liver diseases, diabetes and gastric ulcer. Such diseases and alcoholism cause an increase in medical expenses, resulting in tremendous problems not only for the individuals and families but also society as a whole. Therefore, more attention should be paid to primary protection, as well as secondary and tertiary protection to allow early detection of diseases and their treatment.

3. Advice on alcohol consumption and health promotion

Those participating in the present survey came to us during daytime on a weekday, indicating that they were concerned about their health. However, their alcohol consumption was higher than the average for country. The Guidelines for appropriate alcohol consumption (Association of health protection 2001) proposes the following 10 items :

- 1) Drink in pleasant conditions and enjoy it.
- 2) Drink at your own pace, not that of others.
- 3) Drink slowly, while dining.
- 4) Know your capacity for alcohol and stop drinking when you reach it. For average Japanese, the appropriate amount of alcohol is 1-2 bottles of beer or 180-360 ml of Japanese Sake, or 1-2 double glasses of whisky.
- 5) Refrain from drinking for two days each week.
- 6) Do not encourage others to drink.
- 7) Do not drink alcohol with medicines, such as sleeping pills, tranquilizers, or diabetes drugs.
- 8) Dilute strong alcoholic drinks with water.
- 9) Do not drink after midnight.
- 10) Have regular medical checkups, especially of liver conditions.

Observing these guidelines should help promote a healthy liver.

Health education as a part of regional nursing activities should not offer knowledge to the local residents but also encourage them to initiate health care measures and create favorable human relationships. Although the number of people undergoing health examinations is still small, it is of primary importance that they are encouraged to act according to good health care programs. Thus, medical institutions, schools and related organizations need to work together. In order for a health care program to be effective the diversity of individuals and their situations need to be considered. Also (Oomoto 2000) pointed out that alcohol is not an ordinary drink but a kind of medicine. Such diverse factors and long-term perspectives as to the alcohol drinking and keeping national health need to guide our standpoint on alcohol consumption and promoting good health for the general population.

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References

Association of health protection. 2001

Oomoto, M. :Control of Alcoholics. Comprehensive Health Care 551 : 16-32, 2000

Shimanaka, K. : Characteristics of alcoholic liver disease in women. Sogo Rinsho 49(4) : 660-661, 2000

Tanaka, T. : Hirokawa Nursing Text book. Geriatric Nursing. Hirokawa Publishing Company, 1995

The Study Circle for Health and Nutrition Information : The 1998 National Nutrition Survey in Japan, 111, 2000

〔原 著〕

性別・年代別飲酒量と肝機能検査値との関連

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【要 旨】 現在の健康づくりは、疾病の早期発見・早期治療という2次予防よりも、病気にならないための積極的な1次予防が重視されている。飲酒習慣が及ぼす生活習慣病対策も、具体的な数値目標が提示され地域の保健センターなどで取り組みはじめている。

平成10年度の基本健康診査を受けた大阪市のH地区住民について、飲酒量と肝疾患の指標となる肝機能検査値の関係を調べた。飲酒量の増加とともに肝機能検査値の異常を示す者の割合が増加していた。また、この受診者たちのうち飲酒習慣の有るものの値は全国平均より高かった。性別でみると男性に大量の飲酒習慣をもつ者が多かったが、女性で飲酒習慣をもつ者の数も全国平均より多かった。一般に健康意識が高いと考えられている今回の基本健康診査の受診者であったが、その飲酒習慣については改善指導を要する。今後、適正飲酒行動を実践できるプログラム作成に本結果を活用したい。

キーワード：飲酒量，肝機能検査値

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