

Betel nut chewing as a risk factor for hepatitis C infection in Taiwan - A Community-Based Study

To the Editor: We completed the comprehensive health survey and structural questionnaires in the adult living in the east area of Taichung City, Taiwan, including the anti-hepatitis C (HCV) antibody status and the components of metabolic syndrome from 2004 to 2005. A total of 1045 people were enrolled in this study. The anti-HCV seropositive (anti-HCV+) prevalence was 6.6% (69/1045). Results were expressed as mean±standard deviation. A p value < 0.05 was considered statistically significant. Multivariate logistic regression analyses were conducted to explore the factors that were independently associated with anti-HCV. The strength of association was presented as odds ratio (OR) with 95% confidence intervals (CI) and p values.

Table 1 shows the basic characteristics of all subjects. The anti-HCV+ subjects had higher alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels, and were elder than the anti-HCV- subjects. In addition, triglycerides levels were significantly lower in the anti-HCV+ subjects compared with the anti-HCV- subjects ($p < 0.01$). There were no significant differences between anti-HCV+ and anti-HCV- subjects in terms of gender, body mass index (BMI), high-density lipoprotein cholesterol (HDL-C) levels, systolic and diastolic blood pressure, and fasting plasma glucose.

Multivariate logistic regression analyses were conducted to clarify the independent factors associated with anti-HCV. Variables included age, sex, smoking, drinking, betel nut chewing, exercise, milk drinking, and the presence of hypertension, diabetes mellitus, and hyperlipidemia. Betel nut chewing was significantly associated with anti-HCV+ (OR, 7.55; 95% CI, 2.51–22.74; $p < 0.01$) as well as with milk drinking (OR, 1.63; 95% CI, 1.00–2.65; $p = 0.05$). After adjusted for appropriated covariates, betel nut chewing was still significantly associated with anti-HCV+ (OR, 9.12; 95% CI, 2.96–28.18; $p < 0.01$) (Table 2).

Chronic HCV infections are the major etiologies of hepatocellular carcinoma HCC in Taiwan [1]. The prevalence of anti-HCV (6.6%) in our study was higher than those in community controls [2]. The prevalence

variation in crude HCV seroprevalence ranged from 0.4 to 10.5% and HCV infection takes 2–4 decades to lead to HCC [3]. The habit of betel nut chewing is prevalent among men in Taiwan. It is especially prevalent among blue-collar workers, less educated men, cigarette smokers, and alcohol drinkers [4]. The population of betel nut chewers increased gradually. Recently, the habit of betel nut chewing was found to be a risk factor of hepatocellular carcinoma (HCC), and an increased HCC risk is associated with seropositivity of anti-HCV in Taiwan [5]. This information indirectly supports our finding that betel nut chewing is an independent risk factor of anti-HCV. Chronic hepatitis C and betel nut chewing is still a major public health concern in Taiwan. Although the precise mechanism for the association between betel nut chewing and anti-HCV remains to be determined, this study suggests that abstention from betel nut chewing is important for the prevention of chronic hepatitis C subjects.

References

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Table 1. Basic characteristics of anti-HCV seropositive and negative subjects*			
	Case Positive n=69(%)	Control Negative n=976(%)	p-value
Male	26(37.7)	365(37.4)	0.96
Female	43(62.3)	611(62.6)	
Age(year)	60.91±11.55	55.94±14.04	<0.01
Height(cm)	157.42±7.51	159.11±7.69	0.08
Waist(cm)	62.16±8.35	63.01±11.27	0.43
BMI(kg/m ²)	25.15±3.96	24.84±3.69	0.54
Systolic pressure(mmHg)	133.26±22.08	133.10±20.93	0.95
Diastolic pressure(mmHg)	81.26±13.77	80.92±13.67	0.84
AST(IU/L)	38.55±27.37	24.56±37.52	<0.01
ALT(IU/L)	40.19±37.30	23.31±49.91	<0.01
Triglycerides(mmol/dL)	1.14±0.58	1.43±0.98	<0.01
FPG(mmol/L)	5.47±1.64	5.73±2.05	0.29
HDL-cholesterol(mmol/dL)	1.09±0.30	1.13±0.34	0.27

*Data presented as mean ± standard deviation or n (%). HCV = hepatitis C virus; BMI = body mass index; ALT = alanine aminotransferase; AST=aspartate aminotransferase ;FPG = fasting plasma glucose; HDL = high-density lipoprotein.

Table 2. Multivariate logistic regression analyses of variables associated with Anti-HCV

		Crude OR(95%CI)	Adjusted OR(95%CI)	p-value
Hypertension	Postive=1,Negative=0	0.57(0.29-1.10)	0.62(0.32-1.21)	0.09
Diabetes Mellitus	Postive=1,Negative=0	0.45(0.19-1.05)	0.52(0.22-1.23)	0.06
Hyperlipidemia	Postive=1,Negative=0	0.45(0.06-3.33)	0.46(0.06-3.43)	0.65
Hepatitis	Postive=1,Negative=0	1.54(0.46-5.20)	2.06(0.60-7.11)	0.4
Drinking	Postive=1,Negative=0	1.73(0.51-5.88)	1.87(0.53-6.58)	0.38
Smoking	Postive=1,Negative=0	1.56(0.72-3.38)	1.64(0.72-3.76)	0.64
Betel nut chewing	Postive=1,Negative=0	7.55(2.51-22.74)	9.12(2.96-28.18)	<0.01
Exercise	Postive=1,Negative=0	1.24(0.76-2.04)	1.01(0.60-1.69)	0.39
Milk drinking	Postive=1,Negative=0	1.63(1.00-2.65)	1.39(0.84-2.31)	0.05

Odds ratios were adjusted for age, gender