

Association of Alcohol Consumption with Diastolic Hypertension in Patients with Mild Liver Stiffness: Analysis of the National Health and Nutrition Examination Survey 2017 - 2020

Chawin Lopimpisuth, MD¹, Pakin Lalitnithi, MD¹, Chanattha Thimphitthaya, MD¹, Ekamol Tantisattamo, MD, MPH, FACP, FASN, FNKF, FAST, FASDIN, FAHA²⁻⁴

¹Faculty of Medicine, Chulalongkorn University and King Chulalongkorn Memorial Hospital, Bangkok, Thailand, ²Harold Simmons Center for Kidney Disease Research and Epidemiology, Division of Nephrology, Hypertension and Kidney Transplantation, Department of Medicine,

University of California Irvine School of Medicine, Orange, California, United States, ³Nephrology Section, Department of Medicine, Tibor Rubin Veterans Affairs Medical Center, Veterans Affairs Long Beach Healthcare System, Long Beach, California, United States, ⁴Multi-

Organ Transplant Center, Section of Nephrology, Department of Internal Medicine, William Beaumont Hospital, Oakland University William Beaumont School of Medicine, Royal Oak, Michigan, United States



Introduction

- Alcohol Consumption
 - Excessive intake is associated with arterial hypertension.
- Cirrhosis
 - Risk of hypertension is unclear due to both vasoconstriction and vasodilation effect.
 - Association between liver fibrosis/stiffness and hypertension remains controversial.

Study aim:

To examine the association between alcohol consumption and hypertension in patients with different degrees of liver fibrosis.

Methods

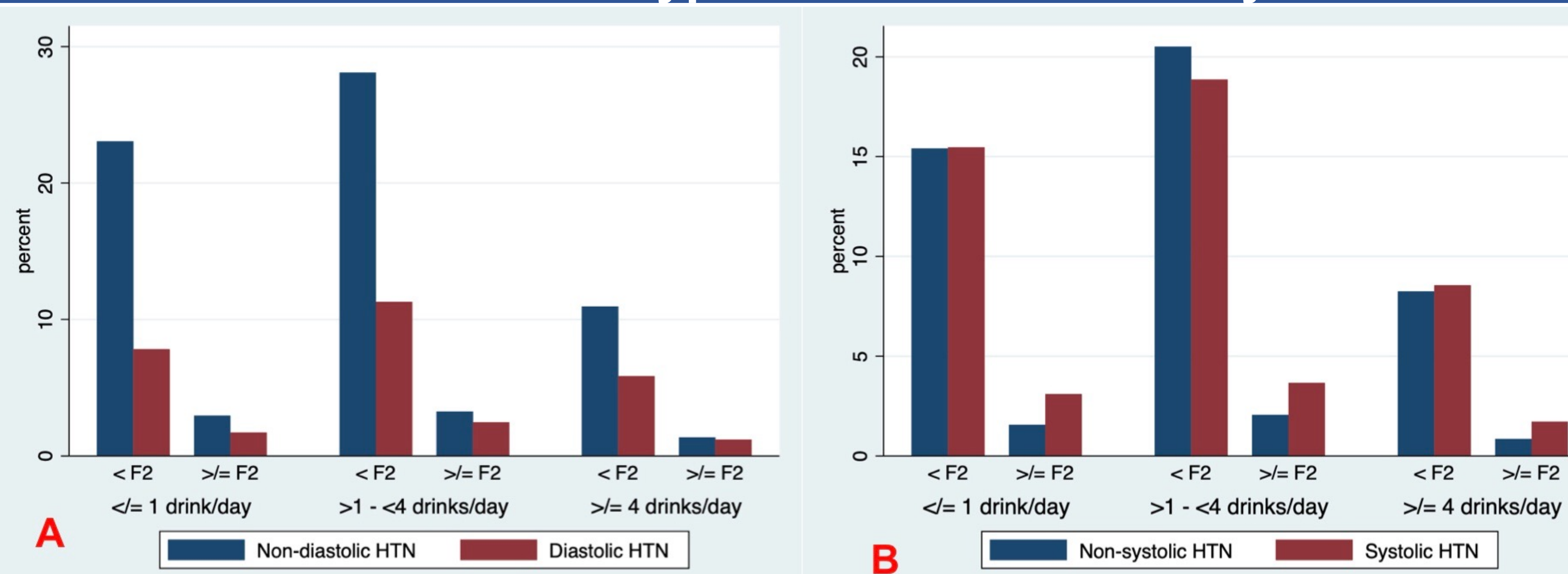
- National Health and Nutrition Examination Survey (NHANES) database from 2017 to March 2020.
- Population: Adult participants (aged ≥ 18)
- The multivariate logistic regression was performed to analyze the association between alcohol consumption and both systolic and diastolic hypertension (SHTN and DHTN) defined as SBP and DBP ≥ 120 and ≥ 80 mmHg, respectively
- Prespecified subgroup analyses were performed to investigate potential effect modifiers.

Results: Study Population

Table 1. Details of patients' characteristics

	Number of pt with available data	Overall (n=9,604)
Age, mean \pm SD; years	9,604	49.5 \pm 18.6
Male, n(%)	9,604	4,654 (49%)
Ethnicities, n(%)	9,604	
Mexican American		1,128 (11.7%)
Other Hispanic		988 (10.3%)
White		3,331 (34.7%)
Black		2,516 (26.2%)
Asian		1,170 (12.2%)
Average Alcohol Intake, n(%)	5,863	
G1: 0-1 drink per day		2,126 (35%)
G2: 1-4 drink per day		2,612 (45%)
G3: more than 4 drinks per day		1,125 (20%)
Fibrotic Stages, n(%)	8,318	
< 7.5 kPa		7,178 (86.3%)
≥ 7.5 kPa		1,140 (13.6%)
Mean Systolic Blood Pressure, mmHg(SD)	7,943	124.1 (19.3)
Mean Diastolic Blood Pressure, mmHg(SD)	7,943	74.3 (11.6)
Diabetic Status, n(%)		1,874 (19.5)

Results: Distribution of Hypertension Stratified by Alcohol Use



Results: Multivariate Logistic Regression

- In multivariate logistic regression, after adjusting for age (<65 vs ≥ 65 years), race, gender, diabetic status, body mass index, hyperlipidemic status, serum creatinine, urinary albumin to creatinine ratio, and fibrotic liver stage
- G2, G3: odds of SHTN
 - OR_{G2} 1.26; P 0.155; 95%CI 0.907 - 1.760
 - OR_{G3} 1.30, P 0.180, 95%CI 0.886 - 1.909
- G2, G3: odds of DHTN
 - OR_{G2} 1.53, P 0.018, 95%CI 1.076 - 2.172
 - OR_{G3} 1.88, P 0.002, 95%CI 1.259 - 2.802
- Subgroup analysis
 - In Mild fibrotic liver disease
 - Significant increased odds of DHTN in G2 and G3
 - OR_{G2} 1.45, P 0.048, 95%CI 1.004 - 2.151
 - OR_{G3} 1.83, P 0.006, 95%CI 1.186 - 2.833
- There was no effect modification observed between alcohol consumption and key covariates.

Conclusions

- In this large national cross-sectional data, there is an association between alcohol intake and DHTN in mild fibrotic liver patients.
- Longitudinal studies are required to further evaluate this association and possible underlying mechanisms.

Contact: Chawin Lopimpisuth, MD
Chawin.lopinpith@gmail.com