Moderate and heavy alcohol consumption are associated with decreased left ventricular ejection fraction after 8 years of follow-up: the Hoorn Study

Authors:
S Van Oort¹, JWJ Beulens¹, AAWA Van Der Heijden², PJM Elders², CDA Stehouwer³, IAT Van De Luitgaarden⁴, IC Schrieks⁴, DE Grobbee⁴, AJ Van Ballegooijen¹, ¹VU University Medical Center, Department of Epidemiology and Biostatistics - Amsterdam - Netherlands (The), ²VU University Medical Center, Department of General Practice and Elderly Care Medicine - Amsterdam - Netherlands (The), ³Maastricht University Medical Centre (MUMC), Department of Internal Medicine - Maastricht - Netherlands (The), ⁴University Medical Center Utrecht, Julius Center Centre for Health Sciences and Primary Care - Utrecht - Netherlands (The),

Topic(s):
Chronic Heart Failure - Other

Citation:
Background/Introduction: Heavy alcohol consumption is associated with an increased risk of heart failure. Data on the prospective relation of alcohol consumption with systolic and diastolic function are scarce.

Purpose: The purpose of this study was to examine the longitudinal association of alcohol consumption with echocardiographic measures of cardiac structure and function. We further explored whether this association was modified by glucose tolerance status.

Methods: We included 778 participants from the Hoorn study, a population-based, prospective cohort study, oversampled for people with an impaired glucose metabolism and type 2 diabetes. Self-reported alcohol consumption was collected at baseline (2000-2001) with a validated food-frequency questionnaire and categorized into: none (0/week), light (>0–3/week), light-to-moderate (>3–7/week), moderate (>7–=14/week), and heavy drinkers (>14/week). Light drinking was considered the reference. Echocardiography was performed at baseline (N=778) and after 8 years follow-up (N=406). Multiple linear regression was used to study the association between alcohol consumption and echocardiographic measures (left ventricular ejection fraction (LVEF), left atrial volume index (LAVI), and left ventricular mass index (LVMI)), adjusted for demographic, lifestyle, and metabolic confounders. Modified Poisson regression was used to study the association between alcohol consumption and incident left ventricular systolic dysfunction (LVEF =50%).

Results: Mean age was 68.4±7.2 years, 49% was female. After 7.6±1 years of follow-up, moderate and heavy alcohol consumption were associated with a decreased LVEF of -4.0% (CI: -7.3;-0.8) for moderate and -5.1% (-8.5;-1.7) for heavy drinkers compared to light drinkers. Heavy alcohol consumption was also associated with a 76% higher risk of incident systolic dysfunction after 8 years of follow-up, compared to light alcohol consumption (RR 1.76 (1.10;2.83)). No associations were found between alcohol consumption, LVMI, and LAVI. We found no effect modification by glucose tolerance status.

Conclusions: Moderate and heavy alcohol consumption were associated with decreased left ventricular systolic function and incident systolic dysfunction after 8 years of follow-up, compared to light drinkers.
Abstract:

Moderate and heavy alcohol consumption are associated with decreased left ventricular ejection fraction after 8 years of follow-up: the Hoorn Study

Authors:

S Van Oort 1, JWJ Beulens 1, AAWA Van Der Heijden 2, PJM Elders 2, CDA Stehouwer 3, IAT Van De Luitgaarden 4, IC Schrieks 4, DE Grobbee 4, AJ Van Ballegooijen 1

1 VU University Medical Center, Department of Epidemiology and Biostatistics - Amsterdam - Netherlands (The)
2 VU University Medical Center, Department of General Practice and Elderly Care Medicine - Amsterdam - Netherlands (The)
3 Maastricht University Medical Centre (MUMC), Department of Internal Medicine - Maastricht - Netherlands (The)
4 University Medical Center Utrecht, Julius Center Centre for Health Sciences and Primary Care - Utrecht - Netherlands (The)

Topic(s):

Chronic Heart Failure - Other

Citation:

Background/Introduction: Heavy alcohol consumption is associated with an increased risk of heart failure. Data on the prospective relation of alcohol consumption with systolic and diastolic function are scarce.

Purpose: The purpose of this study was to examine the longitudinal association of alcohol consumption with echocardiographic measures of cardiac structure and function. We further explored whether this association was modified by glucose tolerance status.

Methods: We included 778 participants from the Hoorn study, a population-based, prospective cohort study, oversampled for people with an impaired glucose metabolism and type 2 diabetes. Self-reported alcohol consumption was collected at baseline (2000-2001) with a validated food-frequency questionnaire and categorized into: none (0/week), light (>0-3/week), light-to-moderate (>3-7/week), moderate (>7=14/week), and heavy drinkers (>14/week). Light drinking was considered the reference. Echocardiography was performed at baseline (N=778) and after 8 years follow-up (N=406). Multiple linear regression was used to study the association between alcohol consumption and echocardiographic measures (left ventricular ejection fraction (LVEF), left atrial volume index (LAVI), and left ventricular mass index (LVMI)), adjusted for demographic, lifestyle, and metabolic confounders. Modified Poisson regression was used to study the association between alcohol consumption and incident left ventricular systolic dysfunction (LVEF =< 50%).

Results: Mean age was 68.4±7.2 years, 49% was female. After 7.6±1 years of follow-up, moderate and heavy alcohol consumption were associated with a decreased LVEF of -4.0% (CI: -7.3; -0.8) for moderate and -5.1% (-8.5; -1.7) for heavy drinkers compared to light drinkers. Heavy alcohol consumption was also associated with a 76% higher risk of incident systolic dysfunction after 8 years of follow-up, compared to light alcohol consumption (RR 1.76 (1.10; 2.83)). No associations were found between alcohol consumption, LVMI, and LAVI. We found no effect modification by glucose tolerance status.

Conclusions: Moderate and heavy alcohol consumption were associated with decreased left ventricular systolic function and incident systolic dysfunction after 8 years of follow-up, compared to light drinkers.