

Abstract Type : Poster

Abstract Submission No. : PO-1174

Factors related to TC-HDL and LDL-HDL Ratio in Hypertensive Patient

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Case Study: Background: One of the health problems related to untreated high blood pressure is atherosclerosis, or plaque build-up in the arteries. Dyslipidemia is one of the risk factors of atherosclerosis. High level of Low Density Lipoprotein (LDL) and High Density Lipoprotein (HDL) cholesterol ratio and also high level of total cholesterol (TC) and HDL cholesterol ratio causes atherosclerosis.

Objective: The objective of this study was to determine the factor related to TC-HDL ratio and LDL-HDL ratio in hypertensive patient.

Methods: This cross sectional study was conducted with 96 subjects by purposive sampling. We constructed data from medical record of hypertensive patient. Anthropometric measurements include body weight and height and body mass index (BMI). The TC, LDL and HDL cholesterol levels of patients were classified based on the National Cholesterol Education Program – Adult Treatment Panel III (NCEP ATP III) classification, while dietary intake measured using semi-quantitative food frequency questionnaire. Data were analyzed with STATA 13.1 with chi square test with 95% confidence level.

Results: Mean of subject's characteristic was analysed. It showed that mean of TC-HDL (4.97 ± 1.92) and LDL-HDL ratio (3.22 ± 1.39) considered high. Age (PR=0.59; 95%CI=0.12-2.36), sex (PR=1.21; 95%CI=0.32-4.59), body mass index (PR=1.69; 95%CI=0.44-7.13) and high fat diet (PR=0.46; 95%CI=0.08-2.02) has no significant association with TC-HDL ratio ($p > 0.05$). Same result goes to LDL-HDL ratio ($p > 0.05$) in association with age (PR=1.16; 95%CI=0.35-3.71), sex (PR=0.98; 95%CI=0.31-3.05), BMI (PR=1.625; 95%CI=0.52-5.31) and high fat diet (PR=0.64; 95%CI=0.17-2.13).

Conclusion: There's no significant association between age, sex, body mass index and dietary intake with TC-HDL ratio and LDL-HDL ratio in hypertensive patient.

Table 1. Subject's Characteristics

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Characteristic	Mean±SD
Age (year)	62.02±10.75
Weight (kg)	58.17±16.13
Height (cm)	158.72±8.30
BMI (kg/m ²)	22.36±4.82
Total cholesterol (mg/dL)	196.09±61.65
Triglyceride (mg/dL)	155.27±96.07
HDL-C (mg/dL)	43.42±15
LDL-C (mg/dL)	129.97±47.45
TC-HDL Ratio	4.97±1.92
LDL-HDL Ratio	3.22±1.39
Systole Blood Pressure (mmHg)	154.06±29.79
Diastole Blood Pressure (mmHg)	91.94±19.66
% daily intake of energy	59.32±29.80
% daily intake of protein	60.87±36.54
% daily intake of fat	59.50±42.43
% daily intake of carb	60.19±30.92

Table 2. Factor related to TC-HDL and LDL-HDL ratio

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Variable	TC-HDL Ratio		PR	95% CI	p
	At risk	Normal			
Age					
≥60	37 (59.68)	10 (71.43)	0.59	0.12-2.36	0.414
<60	25 (40.32)	4 (28.57)			
Sex					
Male	34 (54.84)	7 (50.00)	1.21	0.32-4.59	0.743
Female	28 (45.16)	7 (50.00)			
BMI					
Overweight-Obese	30 (48.39)	5 (35.71)	1.69	0.44-7.13	0.39
Normal	32 (51.61)	9 (64.29)			
Dietary Intake					
High Fat	39 (62.90)	11 (78.57)	0.46	0.08-2.02	0.264
Normal	23 (37.10)	3 (21.43)			
Variable	LDL-HDL Ratio		PR	95% CI	p
	At risk	Normal			
Age					
≥60	34 (65.38)	13 (61.9)	1.16	0.35-3.71	0.779
<60	18 (34.62)	8 (38.1)			
Sex					
Male	27 (51.92)	11 (52.38)	0.98	0.31-3.05	0.972
Female	25 (48.08)	10 (47.62)			
BMI					
Overweight-Obese	26 (50)	8 (38.1)	1.625	0.52-5.31	0.356
Normal	26 (50)	13 (61.9)			
Dietary Intake					
High Fat	32 (61.54)	15 (71.43)	0.64	0.17-2.13	0.424
Normal	20 (38.46)	6 (28.57)			