

# Prediction value of LDL/HDL-cholesterol ratio for long-term prognosis after acute coronary syndrome and correlation with coronary artery disease severity

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**Introduction:** Dyslipidaemia is an important correctable risk factor for coronary artery disease (CAD). Studies have shown that low levels of low-density lipoprotein cholesterol (LDL-C) correlate with lower CAD morbidity and mortality rates<sup>1</sup>. Many patients who achieved low levels of LDL-C still encounter a major adverse cardiovascular event (MACE) due to other risk factors. Better stratification of patients at higher risk for novel MACE after first acute coronary syndrome (ACS) is needed. Evidence indicate that LDL-C/HDL-C ratio could be a better predictor of cardiovascular disease, as it includes levels of both LDL-C and HDL-C<sup>2,3</sup>. The aim of this study was to investigate the prediction value of LDL-C/HDL-C ratio for long term prognosis after ACS and correlation with CAD severity.

**Patients and Methods:** We included patients hospitalized at our centre with ACS from January 2017 to 2024. Demographic data, data on LDL-C and HDL-C levels on admission and calculated Syntax score were used. Syntax score is an angiographic scoring system which determines complexity by using coronary anatomy and lesion characteristic<sup>3</sup>. Follow-up data were collected by clinical visits or telephone interviews. MACE was defined as the composite of cardiovascular death, ACS and need for surgical or percutaneous revascularization.

**Results:** This registry-based study included 2471 patients with ACS, median age of 64 (IQR 56-73) years, 69% male. Median follow up was 17 (3-27) months. 44% had non-ST elevation (NSTEMI) ACS and 54% had ST elevation myocardial infarction (STEMI). Median Syntax score was 13 (IQR 7-20.5), with 61% patients having low ( $\leq 16$ ), 21% patients medium (16-22), and 18% high Syntax score ( $> 22$ ), respectively. LDL-C/HDL-C ratio correlated significantly with cardiovascular death, with weak coefficient (2.94 vs. 2.54  $p < 0.001$ ;  $\rho = 0.102$ ,  $p < 0.0001$ ), but did not correlate with MACE (2.88 vs. 2.92,  $p = 0.188$ ,  $\rho = 0.06$ ,  $p = 0.77$ ) or CAD severity as assessed by Syntax score (low 2.92 vs. medium 2.83 vs. high 2.86,  $p = 0.597$ ;  $\rho = 0.4$ ,  $p = 0.09$ ). This remained the same in both STEMI and NSTEMI ACS patients.

**Conclusion:** Our data suggest that LDL-C/HDL-C ratio can not be used as a relevant predictor of long-term MACE after ACS, cardiovascular death or CAD severity. Additional studies are needed to establish the real value of LDL-C/HDL-C ratio.

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## LITERATURE

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