INTRODUCTION

- Diabetes markedly increases the risk and accelerates the course of atherosclerotic cardiovascular disease (ASCVD).¹
- While lipid-lowering therapy (LLT) has been shown to reduce ASCVD risk,² there is limited real-world evidence on the management of LDL-C in patients with clinical ASCVD and comorbid diabetes in Canada.

OBJECTIVE

- This retrospective study describes the clinical characteristics and LDL-C management of patients with ASCVD and diabetes from the health system data of Alberta, Canada, during 2011-2015.

METHODS

- **Study Design and Data Sources**
  - Retrospective observational study conducted in Alberta, Canada utilizing several provincial health system databases.

- **Study Population**
  - Patients were identified using ICD-9-CM/ICD-10-CA codes.
  - ASCVD defined as: angina, cerebrovascular disease/stroke, transient ischemic attack, coronary atherosclerosis/myocardial infarction(MI), peripheral artery disease(PAD), percutaneous coronary intervention or coronary artery bypass graft surgery.
  - The index date was the first LDL-C test date post-diagnosis.
  - Further inclusion criteria: ≥18 years with continuous enrollment, defined as having 1 year of pre-index data and ≥1 year of post-index (after ASCVD diagnosis) follow-up data.
  - Pre-existing diabetes was defined using ICD-9-CM/ICD-10-CA codes within one year prior to ASCVD identification date.
  - Patients receiving LLT were included in this analysis.

- **Study Variables**
  - Recommended LDL-C levels were defined based on a threshold of 2.0 mmol/L aligned with 2016 guideline recommendations.²
  - Follow-up LDL-C test was defined as the first test ≥2 weeks and up to 1-year after the index LDL-C test.
  - LLT were defined as statins (low, moderate-, and high-intensities), fibrates, bile acid sequestrants, nicotinic acid and derivatives, and other lipid modifying agents (omega-3 triglycerides including other esters and acids, ezetimibe, evolocumab, and alirocumab).
  - Adjunctive ezetimibe included any lipid-lowering therapy combination.

- **Statistical Analysis**
  - Patient characteristics were summarized descriptively.
  - Patients with an index and follow-up LDL-C descriptively were examined to determine threshold LDL-C levels.

RESULTS

- **Figure 1. Flow Diagram of Study Cohort**
  - Total number of ASCVD cases = 281,665
  - Total number of ASCVD cases with LDL-C test post-diagnosis = 219,488
  - Total number of ASCVD cases with LDL-C test post-diagnosis and received LLT = 144,607
  - Patients receiving LLT were included in this analysis.

- **Table 1. Patient Characteristics**
  - Patients with diabetes were more likely to have stroke, MI, or PAD.
  - Comorbid congestive heart failure was twice as common in those with diabetes.

- **Table 2. Recommended LDL-C thresholds at the index and follow-up tests among patients with ASCVD stratified by diabetes**
  - For pre-existing diabetes:
    - Total LDL-C Level: Total n = 72,637
    - LDL-C Mean (± SD): 18,214 (2.2 (± 1.0))
    - Not Achieved n (%): 29,880 (41.6)
    - Achieved n (%): 42,757 (58.4)
  - For no pre-existing diabetes:
    - Total LDL-C Level: Total n = 134,016
    - LDL-C Mean (± SD): 18,214 (2.2 (± 1.0))
    - Not Achieved n (%): 44,677 (33.5)
    - Achieved n (%): 89,339 (66.5)

LIMITATIONS

- **Health system data were not collected for research, but for hospital administration.**
- **ASCVD cases were only captured within the study period.**
- **The results reported here may be underestimated as the study identification did not include primary care data.**

CONCLUSIONS

- Patients with ASCVD and pre-existing diabetes were more likely to have stroke, MI, or peripheral arterial disease relative to those without diabetes.
- Treatment and LDL-C achieved thresholds were higher in patients with pre-existing diabetes.
- Further research is needed to examine whether the improved lipid management in patients with ASCVD and pre-existing diabetes translates to improved clinical outcomes.

REFERENCES


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DISCLOSURES:

Chen G is a consultant for Medtronic which received funding for the study from Amgen. Francis MM and Cowling T are employed by Medtronic which received funding for the study from Amgen. Tai M, Pinto L, Colgan S, and Roogoza R are employed by Amgen who funded this study, and hold Amgen stock. Anderson T received research funding from Amgen and Merck as the local (Calgary) Principal Investigator on the Dal-corr study as well as consulting fees from Sanofi, Amgen and Bayer.

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