Unique Discordance of LDL-C Levels and Apo A1/Remnant Ratios in South Asians: Implications for Risk Stratification for Prevalent Diabetes Mellitus

for the South Asian Heart Foundation Registry at the North American Bengali Conference

ABSTRACT

Background: South Asians (SA) have high risk for cardiovascular complications and diabetes, yet LDL-C levels may underestimate this risk in SA. South Asians have high triglycerides (TG), low HDL-C, and insulin resistance; the novel Apo A1/Remnant ratio (A1/Rem) (remnant: VLDL3) has superior risk stratification. Apo A1 is the major protein of HDL, helps in reverse cholesterol transport. With oxidative damage of Apo A1, HDL becomes pro-inflammatory. Remnants, generated by lipolysis of TG-rich lipoproteins, are pro-inflammatory, pro-atherosclerotic, and pro-thrombotic. Although A1/Rem is > 8 vs A1REM: 3-5 decades lower in risk of cardiac mortality in other populations, it has not been evaluated in SA.

Methods: We evaluated the prevalence of DM among study subjects comparing the A1/Rem ratio to LDL-C tertiles and TG risk groups in unique registry data of SA in the United States. We reviewed the clinical history and Vascular Auto Profile (VAP) + lipid panel utilizinglipoprotein fingerprinting to directly measure lipid sub-fractions for 548 participants (426% women) of the South Asian Cardiovascular Registry. Prediabetic DM was defined as HbA1c > 5.5.

RESULTS

- There were 146 women (26%) in the study cohort.
- The prevalence of diabetes mellitus increased with increasing triglyceride levels and worsening of Apo A1/Remnant ratios: 15%, 20%, 30%, and 40% but not with increasing LDL-C levels: 20%, 30%, and 40%.

- Patients of interest

VAP + Lipid Panel With Direct Measurements of Lipoproteins (Medicore Provided)
Patients Stratified Based on LDL-Tertiles As Well As TG Clinical Risk Groups

- LDL-C (mg/dL) Tertiles
  - Total Cholesterol (mg/dL)
  - HDL-C (mg/dL)
  - TG (mg/dL)
  - Apo A1/Remnant Ratio

- DM

- TG (mg/dL) Risk Groups
  - Total Cholesterol (mg/dL)
  - HDL-C (mg/dL)
  - LDL-C (mg/dL)
  - Apo A1/Remnant Ratio

LIMITATIONS

- This is a small study. Further research is necessary with larger sample size to confirm these results.
- This is a cross-sectional study. Prospective studies are needed to determine the association of DM with the incidence of diabetes and cardiovascular events in South Asians.

CONCLUSIONS

- In a cross-sectional study involving South Asian immigrants participating in a community registry, there is a unique discordance between risk stratification by LDL-C levels and by A1/Rem ratios. The A1/Rem is a better discriminator of the risk for DM.
- Clinical implications: The novel Apo A1/Remnant ratio may be more useful for risk stratification in defining prevalent DM in South Asians. Further research is necessary to confirm this observation. However, with the current guidelines for high triglycerides, low HDL-C, and insulin resistance, this ratio identifies high risk patients who may benefit from aggressive lifestyle changes in addition to pharmacotherapy targeting high triglycerides in addition to the classic approach of LDL-lowering therapies.

REFERENCES

- Kandukuri NR et al: J Fam Pract-heart 2014; 63: 959-968

ABBRIVIATIONS

- Apo A1/Remnant: ratio of Apo A1 to total remnant fraction
- HDL: High Density Lipoprotein cholesterol
- LDL-C: Low Density Lipoprotein cholesterol
- TG: Triglycerides
- VAP: Vascular Auto Profile

DISCLOSURES

None