Effects of High-Sensitivity C-reactive Protein on Lipoprotein(a)-Associated Cardiovascular Mortality Risk in Patients With Coronary Artery Disease Undergoing Percutaneous Coronary Intervention

Deshan Yuan, MD

National Center For Cardiovascular Diseases, Fuwai Hospital, China

Disclosure

- The authors have no financial conflicts of interest to disclosure

Background

- Lipoprotein(a) [Lp(a)] and high-sensitivity C-reactive protein (hsCRP) have been recommended as biomarkers to refine risk stratification of general population according to the ACC/AHA guidelines
- MESA study reported that Lp(a) increased CV risk only in individuals with concomitantly elevated hsCRP
- A post-hoc analysis from ACCELERATE trial indicated that Lp(a)-mediated CV risk was modulated by hsCRP levels
- In patients with CAD undergoing percutaneous coronary intervention (PCI), information is limited about the interrelationship between Lp(a) and hsCRP with CV mortality

Objective

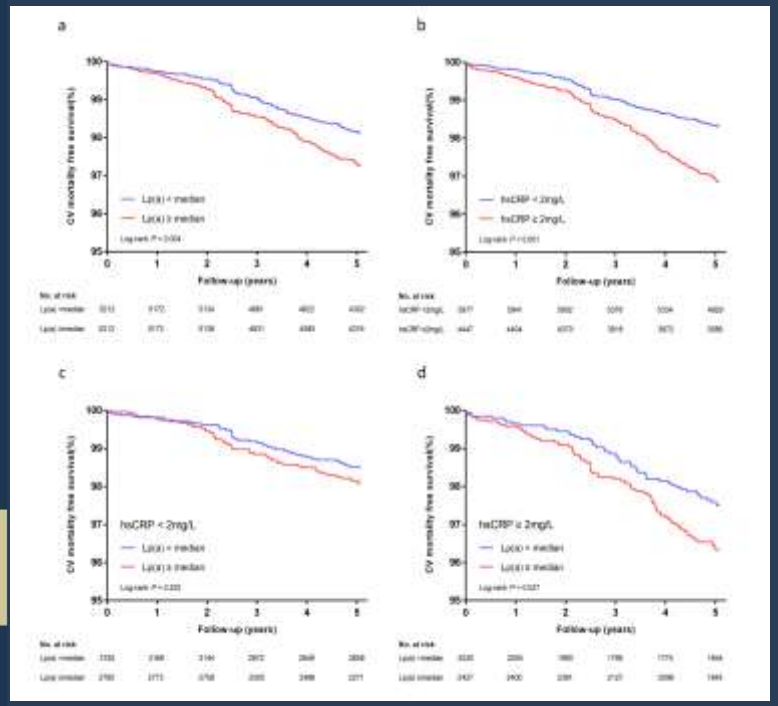
- This study aimed to investigate whether hsCRP has effects on Lp(a)-associated CV mortality risk in patients with CAD undergoing PCI based on a large secondary prevention cohort from China

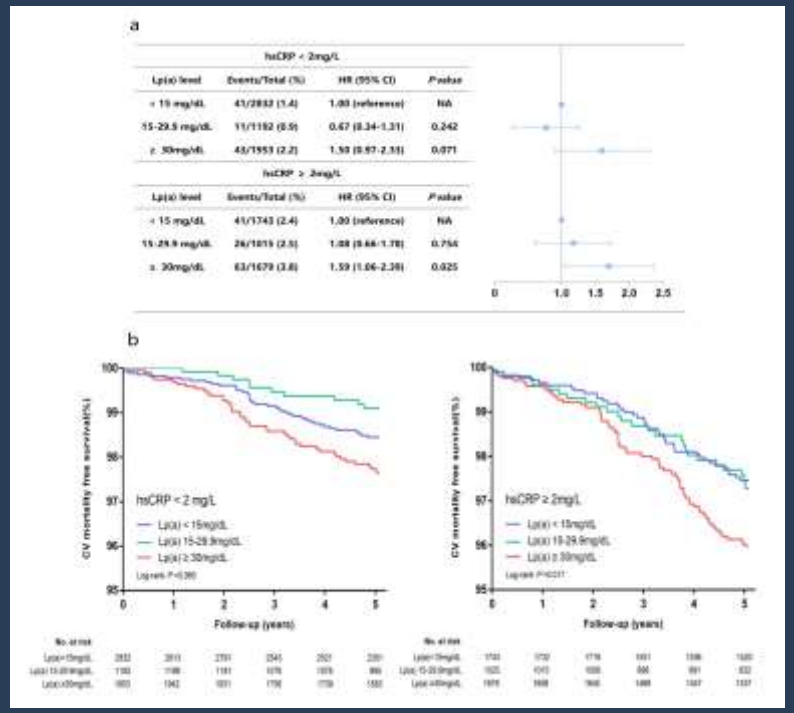
Methods

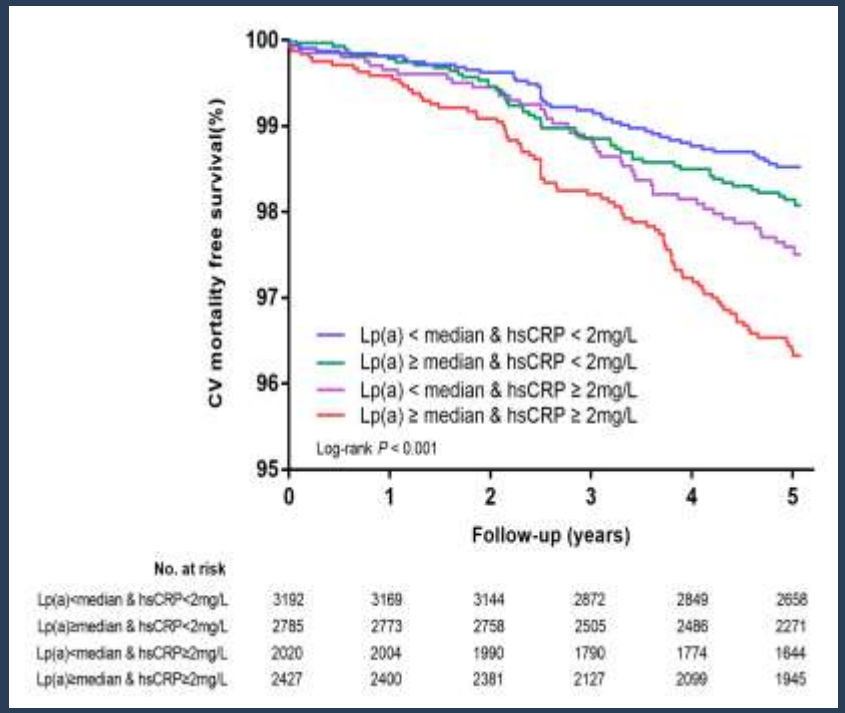
- A total of 10424 patients with measurements of both lipoprotein(a) and hsCRP were included in the study.

- Cox proportional hazards models and Kaplan-Meier analysis were performed to evaluate the relationship between Lp(a), hsCRP and CV mortality.

Results


a
b
c
d
Follow-up (years)
hsCRP < 2mg/L
hsCRP ≥ 2mg/L


a
b
hsCRP < 2mg/L
hsCRP ≥ 2mg/L
Follow-up (years)


CV mortality free survival(%)
Lp(a) < median & hsCRP < 2mg/L
Lp(a) ≥ median & hsCRP < 2mg/L
Lp(a) < median & hsCRP ≥ 2mg/L
Lp(a) ≥ median & hsCRP ≥ 2mg/L
Log-rank P < 0.001
Follow-up (years)
No. at risk
Lp(a)<median & hsCRP<2mg/L 3192 3169 3144 2872 2849 2658
Lp(a)≥median & hsCRP<2mg/L 2785 2773 2758 2505 2486 2271
Lp(a)<median & hsCRP≥2mg/L 2020 2004 1990 1790 1774 1644
Lp(a)≥median & hsCRP≥2mg/L 2427 2400 2381 2127 2099 1945

Discussion points

- The pathogenic effects of Lp(a) on ASCVD

Atherogenic

Prothrombotic

Trigger inflammatory response

- The mechanisms underlying the synergistic effect between Lp(a) and hsCRP

- The potential benefit of combination therapies targeting patients with dual elevation of Lp(a) and hsCRP

Limitations

- Dynamic changes of Lp(a) and hsCRP during follow-up were not available
- Potential confounders could not be adequately adjusted due to the observational design
- This study was conducted in Chinese patients with CAD undergoing PCI, and whether the findings could be extended to other demographic groups remains unknown

Conclusion

- In CAD patients undergoing PCI, Lp(a)-associated CV mortality risk might be conditioned by hsCRP. Evaluation of Lp(a) and hsCRP may help to identify high-risk individuals who would benefit from further therapeutic interventions