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1422-P: Integrating Lipoprotein(a) with Retinal Imaging Biomarkers for Cardiovascular Risk Assessment: UK Biobank Analysis **FREE**

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Introduction and Objective: Lipoprotein(a) [Lp(a)] is a genetically determined cardiovascular disease (CVD) risk factor. AI-derived retinal biomarkers enable non-invasive vascular phenotyping and may complement circulating markers for CVD risk assessment. We examined associations between elevated Lp(a) and incident CVD in UK Biobank and whether associations differed by retinal risk.

Methods: We included 50,475 participants without baseline CVD with available Lp(a) and gradable retinal photographs. Elevated Lp(a) was defined as ≥ 125 nmol/L. Dr Noon CVD retinal risk score was calculated and grouped as low (0-30) versus elevated (31-100). Incident CVD outcomes were assessed using Cox proportional hazards models.

Results: Participants with elevated Lp(a) had higher LDL-C and more frequent statin use (both $P < 0.001$). Elevated Lp(a) was associated with higher risk of any incident CVD event (10.8% vs 9.0%; HR 1.16, 95% CI 1.06-1.26; $P < 0.001$) and myocardial infarction (2.6% vs 2.0%; HR 1.20, 95% CI 1.00-1.43; $P = 0.047$), but not stroke (HR 0.95, 95% CI 0.75-1.20; $P = 0.649$). Associations differed by retinal risk: elevated Lp(a) was not associated with CVD events in the low-risk group (HR 1.12, 95% CI 0.83-1.51; $P = 0.466$) but was associated with higher risk in the elevated-risk group (12.5% vs 10.7%; HR 1.16, 95% CI 1.06-1.27; $P = 0.001$). Adding Lp(a) to Dr Noon CVD improved discrimination (C-index 0.6490 to 0.6515; $\Delta 0.0024$; $P = 0.001$).

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Disclosure

S. Thakur: Employee; Current; Mediwhale Inc. **J. Seo:** Employee; Current; Mediwhale Inc. **D. N** [View Metrics](#) Employee; Current; Mediwhale Inc. **M. Jang:** Employee; Current; Mediwhale Inc. **S. N** **i:** Consultant; Current; Mediwhale Inc. **T.H. Rim:** Stock/Shareholder; Current; Mediwhale Inc.

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