

Assay Summary

Lipoprotein (a)

Clinical Use

Assess risk of cardiovascular disease

Test Code

7382

Clinical Background

Lipoprotein(a) [Lp(a)] is a modified form of low-density lipoprotein (LDL) cholesterol in which the glycoprotein apolipoprotein (a) is covalently linked to the apolipoprotein B (Apo B) moiety of LDL. Multiple Lp(a) isoforms exist due to variation in the number of repeats of kringle 4, a protein domain present in plasminogen. Genetically determined isoforms with smaller molecular weights are associated with higher Lp(a) blood levels.¹ Lp(a)'s genetic linkage to the plasminogen gene leads to prothrombotic activities, whereas similarity to LDL leads to atherogenic activities.²

Elevated Lp(a) blood levels are commonly observed in patients and families with premature coronary heart disease (CHD). Both retrospective and prospective studies have identified Lp(a) as an independent risk factor for CHD.³⁻⁶ Conflicting results attributed to analytical issues, sample size, and duration of follow-up, however, have been reported.⁷⁻⁸ More recent studies such as the Framingham Study^{3,4,9} have addressed these limitations.

The treatment of elevated Lp(a) levels has been controversial. Diet, exercise and lipid-lowering statins appear ineffective; whereas, estrogen replacement therapy, niacin (nicotinic acid), neomycin, and apheresis are more successful. Nonetheless, the clinical effect of lowered Lp(a) levels is not yet known.

Individuals Suitable For Testing

- Patients with suspected premature CHD or Cerebrovascular Disease
- Patients with strong family history of premature CHD
- Family members of a patient with increased Lp(a)
- Patients with CHD without established risk factors

Specimen Requirements

- 1 mL refrigerated serum; 0.2 mL minimum
- Collect specimen following 12 or more hours of fasting

Method

- Immunoprecipitin
- Analytical specificity; no Apo B crossreactivity up to 436 mg/dL Apo B
- Analytical sensitivity (limit of quantification): 1.5 mg/dL

● Reference Range

- Less than 75 nmol/L

● Interpretive Information

Normal levels in the African-American population may be 2 to 3 times the values in Caucasian and Asian populations. Native-Americans and Mexican-Americans have lower normal levels (no lower than one half) relative to the Caucasian and Asian populations.

Increased levels of Lp(a) are observed in patients with coronary artery disease, stroke, cerebrovascular and peripheral vascular disease. Substantial increases are secondarily (not genetically related) observed in nephrotic syndrome and end-stage renal disease. Decreased Lp(a) levels may be seen in several rare disorders (lecithin: cholesterol acyltransferase [LCAT] deficiency, lipoprotein lipase [LPL] deficiency, liver disease). Results should be interpreted in conjunction with the patient history, clinical findings, and other laboratory test results.

● Attributable Risk (%) for CHD Associated with Various Factors

	Men	Women
Lp(a), high	9	18
Cholesterol, high	10	19
HDL, cholesterol, low	13	19
Smoking	55	-

Source: JAMA 276:544-548, 1996
Circulation 90: 1688-1695, 1994

References

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This test uses a kit or components not approved or cleared by the FDA. The performance characteristics of this test have been established by Quest Diagnostics Incorporated.