LIPOPROTEIN (a)

Pathologists Without Borders *Maabara ya Kisasa*

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What is Lipoprotein(a)

Lipoprotein(a) is composed of the unique glycoprotein (a) which is attached to a disulfide bound apo B-100. Lipoprotein(a) is naturally present in human plasma in very low concentrations. Lipoprotein(a) has striking structural homology with human plasminogen which suggests a function for lipoprotein(a) in thrombogenesis.

Lipoprotein(a) strongly contributes to coronary heart disease (CHD) risk when LDL-cholesterol and lipoprotein(a) are concomitantly high in concentration

Lipoprotein and CHD Risk

Evidence from reviewed publications indicate lipoprotein(a):

- is independently associated with CHD
- is a risk factor for premature CHD in persons < 50 years of age and in the elderly (older than 70 years)
- if elevated, increases risk for CHD in combination with
  Other CHD risk factors.

High lipoprotein(a) concentration has been shown to predict risk of angina and the risk is substantially increased with concomitant high LDL-cholesterol concentration.

Broadly speaking, there are 4 major categories of lipid abnormalities in humans:

- elevated low-density lipoprotein cholesterol (LDL-C)
- low high-density lipoprotein cholesterol (HDL-C)
- elevated triglycerides
- elevated lipoprotein(a) [Lp(a)]

LDL-C, HDL-C and triglyceride levels are affected by diet. By contrast, Lp(a) plasma levels are mediated largely by the LPA gene locus present on chromosome 6q22–23, with small-to-negligible effects of diet.

Metabolism

It is believed that plasma concentrations of Lp(a) are determined chiefly by rates of hepatic synthesis of apolipoprotein(a), although the site of formation of Lp(a) has not been definitively identified. Lp(a) is thought to be catabolized primarily by hepatic and renal pathways, but these metabolic routes do not appear to govern plasma Lp(a) levels.

Laboratory Analysis

Reference ranges of Lp[a] vary and depend on assay and reporting laboratories.

Several types of Lp(a) assays are currently available, prominent among them are sandwich enzyme-linked immunosorbent assays (ELISAs), noncompetitive ELISAs, latex immunoassays, immunonephelometric assays, and immunoturbidometric and fluorescence assays

Whom to screen

It is recommended that Lp(a) should be measured once in all subjects at intermediate or high risk of CVD/CHD who present with:

- Premature CVD
- Familial hypercholesterolaemia
- A family history of premature CVD and/or elevated Lp(a)
- Recurrent CVD despite statin treatment
- ≥3% 10-year risk of fatal CVD according to the
- European guidelines

LASSA guidelines adopted from the European Consensus Guidelines, 2010

The use of novel biomarkers of cardiovascular disease (e.g. hsCRP) and imaging technologies are not recommended routinely and should be reserved to refine risk assessment in patients considered to be at moderate risk where there is uncertainty about whether to initiate drug therapy.

It should be noted that hsCRP is a nonspecific inflammatory marker that may be elevated from many causes (e.g. acute infections or non-infectious inflammatory disorders). Measuring Lp(a) is only appropriate in HIGH CVD risk subjects and/or when there is a family history of premature CVD. When Lp(a) is used as a risk marker, the cut-off value is
>50 mg/dl

Lipoprotein(a) measurement at Lancet Laboratories

Principle of method: Immunoturbidimetry

Specimen Requirements: **Serum**

TAT: **Contact your local laboratory**

References

1. Emerging Biomarkers for Primary Prevention of Cardiovascular Disease and Stroke – AACC, Cooper at el
2. E-medicine
3. Lipoprotein(a): Cellular Effects and Molecular Mechanisms – Kirsten Riches Cholesterol Volume 2012, Article ID 923289, 10 pages doi:10.1155/2012/923289
4. Lipoprotein(a) as a cardiovascular risk factor: current status; European Heart Journal (2010) 31, 2844–2853
5. South African Dyslipidaemia Guideline Consensus Statement; March 2012, Vol. 102, No. 3; SAMJ

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