Commentary

Lysosomal Acid Lipase Activity: A Tool for the Detection and Management of Fatty Liver Disease?

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The plethora of new publications on non-alcoholic fatty liver disease (NAFLD) in both pediatric and adult populations worldwide is testimony to the scale of this problem (Abd El-Kader and El-Den Ashmawy, 2015; Sanyal et al., 2015). Projections on the numbers of cases as well as related liver transplantations in the coming decades underscore the urgent need for expanded research into the mechanisms through which NAFLD develops and the design of more effective strategies for its management. In this issue of EBioMedicine, Baratta et al. present data suggesting that a blood test for lysosomal acid lipase (LAL) activity might serve as a useful tool for these endeavors (Baratta et al., 2015).

Baratta and colleagues screened LAL activity in substantial numbers of NAFLD (n = 240) and NASH (n = 35) patients, as well as healthy subjects (n = 100), using a modified, validated technique that employs dried blood spots (Hamilton et al., 2012). The data show that NAFLD patients had significantly lower LAL activities than healthy subjects, and that activities were even lower in NASH patients. This study’s findings have important implications for the potential use of blood LAL activity as a screen in the detection and management of NAFLD. Inherent in this premise is the assumption that the activity of LAL detected in dried blood spots faithfully reflects that in cells throughout the body, particularly in the liver.

LAL plays a key role in the regulation of intracellular lipid homeostasis. Specifically, it hydrolyzes esterified cholesterol (EC) and triglycerides (TG) contained within lipoproteins, particularly low density lipoproteins (LDL) and related particles, that are taken up by cells via receptor-mediated and bulk-phase endocytosis. Mutations in LIPA, the gene that encodes LAL, result in either Wolman Disease, or in Cholesteryl Ester Storage Disease (CESD). Whereas WD is a severe, early onset illness caused by complete loss of LAL activity, CESD is a more notable disease that in cells throughout the body, particularly in the liver.

While further exploration of these mechanisms is essential, so too is the development of reliable biomarkers for identifying NAFLD/NASH patients and monitoring their response to treatment. The results of the current investigation demonstrate the potential of blood LAL activity in meeting this need.
Declaration of Interests

None.

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