

Electronegative LDL: Could it be a Potential Biomarker for Organ Interactions?

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Commentary

Obstructive Sleep Apnoea Syndrome (OSAS) and obesity are linked by bidirectional causality, where the effects of one affect the other. The factors most involved in the association between OSAS and obesity are oxidative stress, systemic inflammation, and gut microbiota. Moreover, there is a potential link between reduced lung function due to sharing common or similar inflammatory processes and the risk of Non-Alcoholic Fatty Liver Disease (NAFLD). Therefore, we hypothesize that decreased lung function could be a contributory factor to the development of NAFLD. Electronegative LDL (L5), a promising clinical biomarker for cardiovascular disease, has an important role in (cardiovascular disease) CVD risk assessment. So, L5 may be a potential biomarker for such dual organ interactions and related diseases, too.

The review article entitled 'the relationship between obstructive sleep apnoea syndrome and obesity: A new perspective on the pathogenesis in terms of organ crosstalk' provides current information concerning the organ interactions and relation potential health effects. Due to the interaction of organs, functional failure of one organ can lead to the dysfunction of others.

It is reported that obesity could result in OSAS via several mechanism including the increased collapsibility of the pharyngeal airway through excessive fat deposition as well as oxidative stress and inflammation. Also, the relationship between lung function and cardio-metabolic conditions has also been highlighted. A previous study has demonstrated that decreased lung function is associated with an increase in low-grade inflammation and increased risk of diabetes, cardiovascular disease, and metabolic syndrome.

After all this, in a recent research article, it is reported that reduced lung function was a risk factor for incident NAFLD. It is also suggested a pathophysiological links among metabolic syndrome, NAFLD and chronic obstructive pulmonary disease. Indeed, OSAS

has been associated with all the components of metabolic syndrome, including NAFLD. Increasing evidence now acknowledges the frequent association between OSAS and metabolic syndrome as well as between OSAS and NAFLD. On the other hand, it is claimed that pulmonary function is being deteriorated with worsening histological severity of NAFLD, especially at the fibrosis stage.

Electronegative LDL (L5), a form of modified LDL, can be detected in different amount ranges in both healthy individuals and patients with various diseases. Since L5 may be a promising biomarker, some authors have emphasized its association with multiple cardiovascular disease risk factors and CVD risk, suggesting that the LDL electronegativity index may have the potential to be a novel index for predicting CVD.

Conclusion

In conclusion, both OSAS and NAFLD are among the risk factors for CVD, it is remarkable that these chronic diseases are associated with obesity and have similar organ interactions. Due to pathological processes such as endothelial dysfunction, inflammation, and oxidative stress, L5 may be a potential biomarker in such chronic and progressive diseases. The current data suggest that L5 levels may represent a new diagnostic and therapeutic target in chronic and progressive diseases. Therefore, future studies should focus on the complex interaction between these pathways, and more comprehensive and well sampled clinical studies on the L5 biomarker should be conducted.

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