In Coronary Heart Disease Patients Gut Microbiome Pattern Predicts Future Heart Attack Risk

A recent study published identifies a gut microbiota pattern that can predict the risk of new adverse cardiovascular events in patients with coronary heart disease (CHD).

Study
The current study was part of the CORDIOPREV study, an ongoing randomized controlled trial involving 1,002 CHD patients who experienced their last coronary event over six months before enrollment. Data from 679 CHD patients in the CORDIOPREV study, with available gut microbiota data, were analyzed.

Results
CHD patients with a recent history of adverse cardiovascular events were more likely to be diagnosed with diabetes, as well as have higher waist circumference, blood glucose, glycated hemoglobin, and blood pressure measurements than CHD patients who did not recently experience an adverse cardiovascular event.

Ten bacterial taxa were associated with the risk of new major adverse cardiovascular events, with equal representation among taxa that were positively and inversely associated with the future incidence of major events. By combining the baseline abundance of these bacterial taxa with the associated risk, the researchers generated an intestinal microbiota-based risk score. Given this association, the researchers suggest that this specific gut microbiota profile can be used in clinical practice to identify patients with coronary heart disease who are at higher risk of developing new adverse cardiovascular events.

A total of 375 healthy individuals without cardiovascular disease were also included in the study as controls. As compared to healthy controls, CHD patients exhibited significant differences in alpha- and beta-diversity of their gut microbiota.

A higher abundance of the Lactobacillus genus was observed in patients who recently experienced major adverse cardiovascular events as compared to CHD patients without this history. This bacterial genus has previously been detected in the blood microbiome of patients with myocardial infarction who suffered major adverse events.

Increased levels of *Escherichia coprostanoligenes* was also reported in patients suffering with new major events. *E. coprostanoligenes* is involved in the production of trimethylamine, a

precursor of trimethylamine N-oxide (TMAO) that has been implicated in the development of atherosclerosis.

Increased LPS levels were associated with new major adverse cardiovascular events, thus suggesting that CHD patients with a leaky gut are more likely to suffer cardiovascular events in the future.

The intestinal microbiota-based risk score was less effective in distinguishing between non-major adverse cardiovascular events and non-cardiovascular disease in patients without cardiovascular disease. This low discriminative resolution was due to the fact that the score was initially designed to assess the association between the gut microbiome profile and the incidence of major adverse events in conditions where cardiovascular disease-related alterations in the gut microbiota are already present.

Conclusion

The study findings suggest that a specific gut microbiota profile may be useful in predicting the risk of new major cardiovascular events in CHD patients. The future clinical application of this strategy has the potential to enhance treatment efficacy for these patients through targeted therapies, such as intensifying lipid-lowering treatment, promoting physical exercise, or modifying the intestinal microbiota.

Source:

https://www.news-medical.net/news/20250421/Gut-microbiome-pattern-predicts-future-heart-attack-risk-in-coronary-heart-disease-patients.aspx