The role of gut microbiota in atherosclerosis and obesity and methods of manipulation

Introduction: New researches found the link between Microbiota and atherosclerosis. Various options were studied and reported that manipulation of this ecosystem can result in improving lipid profile, atherosclerosis and obesity.

Aims and Objectives: To analyse and ascertain recent advances and reports which linked gut microbiota to atherosclerosis and obesity. Moreover, analysing several options to alter the composition of species to reduce the risk of atherosclerosis.

Methodology: a systematic analysis and review of available recent medical literature related to the role of microbiota in atherosclerosis and obesity and various ways of tackling this complex ecosystem.

Results: Microbiota can metabolise dietary fat and Choline in to metabolites that can predict and induce atherosclerosis, such as trimethylamine-N-oxide (TMAO), peptidoglycan, Hippurate and short chain fatty acids. This could ultimately lead to alteration of cholesterol metabolism and foam cells. Several potential methods available to tackle this, which may improve lipid metabolic profile. The options include, prebiotics, probiotics, symbiotic and gut microbial transplantation. Polyphenol-rich cranberry can improve metabolic syndrome. Ingestion of probiotics (such as soy) may improve lipid profile. Similarly, symbiotic may increase HDL levels. Studies are ongoing to address gut microbial transplantation to prevent atherosclerotic plaque formation

Conclusion: Microbiota has a pivotal role in atherosclerosis and fat metabolism through metabolites. Re-shaping the composition of gut flora species through prebiotics, probiotics and symbiotic, can ultimately tackle the formation of atherosclerotic plaque and incidence of obesity. Studies yet to approve antibiotics and gut microbial transplantation to tackle atherosclerosis.