Comparison of Fatty Acid Profiles of Aorta and Internal Mammary Arteries in Patients with Coronary Artery Disease

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Background: Atherosclerosis represents the principal cause of death in the many societies. Since few data have been published about the composition of fatty acids in atherosclerotic arteries such as the aorta comparing to the non affected internal mammary artery which is used for aortocoronary bypass grafting, we compared the fatty acid profiles of atherosclerotic aorta and internal mammary arteries in human individuals.

Methods: Twenty-one angiographically documented coronary artery disease (CAD) patients who were admitted to the open heart surgery division enrolled in this study. They were operated electively for coronary artery bypass grafting surgery (CABG). Small segments of ascending aorta and internal mammary arteries were sampled during open heart surgery. The samples were subjected to lipid extraction and fatty acid analysis by high performance liquid chromatography.

Results: The results showed that different fatty acid profiles were seen in the aorta and internal mammary arteries. The atherosclerotic aorta contained lower amounts of unsaturated fatty acids (including trans isomer of oleic acid) and higher proportions of saturated fats comparing to the internal mammary. In the aorta also, the amounts of ω6 series of fatty acids were more and levels of ω3 fats were less than the internal mammary.

Conclusion: This study suggests that modification of fatty acids may play a role during atherogenesis.