NATRIURETIC PEPTIDE-MEDIATED IMAGING AND/OR TREATMENT OF ATHEROSCLEROTIC PLAQUE

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Background

Atherosclerosis is a disease process in which lipid deposition causes the formation of plaques that lead to thickening of the artery walls. The cause of a majority of fatal acute myocardial infarction and sudden coronary death is due to the rupture of soft or unstable plaques; however, there is no effective method to detect the presence of these types of plaques. The C-type natriuretic peptide, one of four natriuretic peptides (NP) that maintain cardiovascular homeostasis, contains a fragment known as the C-type atrial natriuretic factor (C-ANF). Among the various receptors, the clearance receptor (NPR-C) is the predominant and it can bind all the NPs and NP fragments. Moreover, in humans there is an increased expression of NPR-C in atherosclerotic plaques.

Technology Summary

The laboratory of Pamela Woodard at Washington University in St. Louis has created a novel radiotracer labeled DOTA-C-ANF imaging agent that detects and accumulates in unstable plaques by binding to NPR-C. Proof of concept experiments demonstrate that the imaging agent shows an increase in the levels of radiotracer activity at the site of unstable plaques in an established rabbit model of atherosclerosis. Furthermore, the imaging agent is specific for sites of arterial injury and binds to NPR-C present on the surface of plaques. The DOTA-C-ANF is a highly sensitive agent with the ability to diagnose an impending rupture of an unstable plaque through the measurement of increased radiotracer activity in an area.