Researchers Observe Asymptomatic Carotid Plaque Healing Mechanisms

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Researchers at Boston University School of Medicine (BUSM) have observed by non-invasive MR imaging (MRI), a healing mechanism for plaque rupture, a potentially life-threatening event in the cardiovascular system that can result in a fatal heart attack or debilitating stroke. The untimely death of well-known television journalist Tim Russert was due to the sudden rupture of a vulnerable plaque in a critical location in a coronary artery. This study, which was published in the September 2 issue of Circulation, shows that not all plaque ruptures are symptomatic.

Atherosclerotic plaque often develops at branch points or curving portions along extracranial and intracranial arteries where blood flow is slowed and more turbulent. This is common in carotid arteries, arteries that supply the head and neck with oxygenated blood.

Researchers at BUSM report that a patient with severe blockages in both the left and right carotid arteries was examined prior to operations (endarterectomy) conducted two months apart to remove the plaques. Sometime after removal of the left carotid plaque, the patient experienced plaque rupture in the right carotid artery without stroke and even without showing any neurological symptoms. This was observed in a second MR image obtained prior to endarterectomy.

“This illustrates the healing of silent atherosclerotic ulceration, which is a specific type of rupture detected by MRIs over a period of two months,” explains project leader, James Hamilton, Ph.D., professor of biophysics and physiology at BUSM. “This has not been reported

previously. In the past there had been evidence of plaques removed from the carotid and human coronary artery through postmortem specimens that small plaque ruptures may occur without notice."

Hamilton and his collaborator Alik Farber, M.D., an associate professor of surgery at BUSM and chief of vascular and endovascular surgery at Boston Medical Center, pointed out that these hemorrhages "disappear" into the plaques but make the plaque more vulnerable to future rupture.

Source: Boston University