

# A rush of blood to the head -- anger increases blood flow

3 July 2009

Mental stress causes carotid artery dilation and increases brain blood flow. A series of ultrasound experiments, described in BioMed Central's open access journal *Cardiovascular Ultrasound*, also found that this dilatatory reflex was absent in people with high blood pressure.

Naqvi and Hahn K Hyuhn, *Cardiovascular Ultrasound* (in press), [www.cardiovascularultrasound.com/](http://www.cardiovascularultrasound.com/)

Source: BioMed Central ([news](#) : [web](#))

Tasneem Naqvi and Hahn Hyuhn from the University of Southern California and Cedars-Sinai Medical Center evaluated carotid artery reactivity and brain [blood flow](#) in response to [mental stress](#) in 10 healthy young volunteers (aged between 19 and 27 years), 20 older healthy volunteers (aged 38 to 60 years) and in 28 patients with essential [hypertension](#) (aged 38 to 64 years). They found that in healthy subjects, mental stress caused vasodilation. This was accompanied by a net increase in brain blood flow. In hypertensive subjects, mental stress produced no vasodilation and no significant change in brain blood flow.

During the experiments, the volunteers were set a series of tasks designed to provoke mental stress, including reading, arithmetic and anger recall tests. The researchers used ultrasound imaging to measure the effects of this activity on the [carotid artery](#) and an artery within the brain, while also measuring blood pressure and heart rate.

According to Naqvi, "Inappropriate vasoconstriction, or lack of dilation in response to mental stress in stable coronary heart disease, contributes to the genesis of [myocardial ischemia](#) and confers an increased risk in patients with coronary artery disease. It will be interesting to see whether the lack of mental stress induced dilation we found defines subjects at increased risk of future cerebral events". Lack of required blood flow increase to the brain during mental activities may potentially affect cognition and cerebral performance during complex cerebral tasks.

More information: Cerebrovascular mental stress reactivity is impaired in hypertension, Tasneem Z

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