

Sympathetic brain to blame for high blood pressure

July 6 2010

High blood pressure can be attributed to a disruption of blood flow to the kidneys, known as renovascular hypertension, which is caused by a narrowing or obstruction of the blood vessels that supply the kidneys. To date, renovascular hypertension had been understood as the kidney's reaction to this disrupted blood flow, which triggers hormone release from the kidneys, causing retention of body fluids, thereby elevating blood pressure.

However, researchers at the University of Bristol have revealed that the brain is also involved in the development of [high blood pressure](#). The implication is that the renovascular hypertension triggers messages to the brain that activates the part of the nervous system (so called sympathetic nervous system) which makes the heart beat harder and narrows [blood vessels](#) causing blood pressure to rise.

The findings of the study, funded by the British Heart Foundation, are revealed in a paper published by the journal, *Hypertension*.

Julian Paton, Professor of Physiology at Bristol, said: "This exciting study demonstrates that the kidney talks to the brain when it is starved of blood and oxygen. This conversation results in blood pressure to rise to levels sufficient to satisfy the kidney's own needs but at the cost of inducing high blood pressure throughout the body."

High blood pressure is a major killer worldwide with one-in-three people now affected; this is set to rise to over 1.56 billion in 2025. Most people

die from stroke, heart attacks or [kidney failure](#) when their blood pressure gets too high.

Remarkably, the researchers were able to completely prevent high blood pressure by blocking a signaling mechanism in the brainstem that causes the excessive sympathetic activity during restrictions in [blood flow](#) to the kidneys.

“If translatable to man, the results from this animal study should make clinicians think twice in their management and treatment of renovascular [hypertension](#),” added Prof Paton.

Professor Jeremy Pearson, Associate Medical Director at the British Heart Foundation, said: "This careful, clever research adds further good evidence for the idea that high blood pressure is strongly controlled by the brain. The fact that the team were able to prevent high blood pressure in rats by blocking certain brain signals raises the hope that new treatments could work in the same way.”

Provided by University of Bristol

Citation: Sympathetic brain to blame for high blood pressure (2010, July 6) retrieved 1 May 2024 from <https://medicalxpress.com/news/2010-07-sympathetic-brain-blame-high-blood.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
