Study highlights risks from arm difference in blood pressure

March 20 2012

In January a research team from the Peninsula College of Medicine and Dentistry reported the first systematic review of findings related to the risk factors associated with a difference in blood pressure between arms.

The first study, which was published in The Lancet, suggested that a difference of more than 10mmHg or 15mmHg in systolic blood pressure (the 'top' reading) was an indicator of increased risk of vascular disease and mortality.

The second study, which is published today (20th March 2012) by *BMJ* Online, looks at data from patients over a 10-year period. The findings of the study support that of the first – that there is a link between a difference in blood pressure between arms and vascular disease and mortality – and further emphasise the need for two-arm blood pressure checks to become the norm.

The study was supported by: the Scientific Foundation Board of the Royal College of General Practitioners; the South West GP trust; and the National Institute for Health Research Peninsula Collaboration for Leadership in Applied Health Research and Care (PenCLAHRC).

Measurements for the study were carried out at The Mid Devon Medical Practice in Witheridge, Devon where Dr. Christopher Clark, lead author of both studies, is a GP.

The study followed up 230 patients receiving treatment in the practice

for hypertension. Two-arm blood pressure readings were taken from participating patients at the start of the study during three successive surgery attendances and they were then followed for 10 years.

Of the 230 patients, 24 percent had a difference between the arms in systolic blood pressure measurements of more than 10mmHg and nine per cent registered a difference of more than 15mmHg. From the authors' previous review, a difference of 10mmHg indicates an increased risk of peripheral vascular disease (the narrowing and hardening of the arteries that supply blood to the legs and feet). A difference of 15mmHg or more is associated with increased risk of peripheral vascular disease; pre-existing cerebrovascular disease (affecting the blood supply to the brain and often associated with conditions such as dementia); and mortality, both as a result of cardiovascular problems and generally.

By carrying out a study over 10 years, the research team was able to assess the impact of an inter-arm difference in blood pressure over a longer period of time and so witness the long-term effect on patients' health. During the study period 52 cardiovascular and 27 cerebrovascular events occurred in 76 patients. Fifty-nine patients died and a total of 100, 44 per cent of the total participating number, either suffered a cardiovascular or cerebrovascular event, or died.

Dr. Christopher Clark commented: "Our 10-year follow-up on hypertensive patients has for the first time shown in a primary care setting that, over time, an interarm difference in systolic blood pressure of 10 mm Hg or more or 15 mm Hg or more predicts reduced mortality and event free survival. The risk of a first vascular event, in the presence of an interarm difference, appears to be as great as that found in patients with pre-existing cardiovascular disease."

He added: "This study supports the potential value of an interarm difference as a simple clinical indicator of increased cardiovascular risk.

Assessment of blood pressure in both arms is recommended by guidelines and should become a core component of initial blood pressure measurement in primary care. Detection of an inter-arm difference should prompt consideration of further vascular assessment and aggressive management of risk factors."

Professor John Campbell, Professor of General Practice and Primary Care at Peninsula College of Medicine and Dentistry said: "This study highlights the vital importance of carefully conducted clinical research derived from community based settings. Nearly one-million consultations take place each day in GP surgeries and practices. UK general practitioners are in a unique position to identify and follow-up cohorts of their patients over extended periods of time using their personal knowledge of patients and their families, and drawing on the availability of high quality clinical records in UK primary care settings. This is a prime example of the benefit of providing continuous care for patients over a period of time acting as the basis for important clinical research, and highlights the importance of addressing clinically relevant questions generated by health professionals delivering care at the coal-face. We hope the results will be used to develop further research examining exactly how the findings can best be used to inform evidence-based care for NHS patients in the UK."

Provided by The Peninsula College of Medicine and Dentistry