Delving deep into ancestry to help doctors prescribe better hypertension treatments

February 23 2015

Scientists are investigating whether treatment for high blood pressure can be improved by taking a person's ethnic heritage into account.

High blood pressure, or hypertension, is common in the general population. A healthy lifestyle alone is not enough to control blood pressure, and drug treatment is required.

There are a wide variety of drugs available and although these are effective and safe, it is often necessary to try different types of drugs and often to use a combination of two or more drugs.

Delay in choosing the right kind of tablet or combination of tablets through 'trial and error' is a major problem and, in a large proportion of people with hypertension, blood pressure is not adequately controlled. Relatively little is known about why some people respond better to one kind of tablet or combination of tablets than others.

It is know that response to treatment differs in different ethnic groups in the UK and may differ between populations in Europe, Asia and Africa.

Now scientists at the University of Glasgow are working, with a consortium led by King's College London, to see if genetic markers of ancestry, combined with a detailed measure of chemical 'metabolites' circulating in the blood that characterise the biochemical processes in each person can predict the best type of drug that person.

This is the goal of the £3.4m AIM HY study, funded by the Medical Research Council and the British Heart Foundation.

Professor Sandosh Padmanabhan, the lead investigator at Glasgow, said: "High blood pressure is currently treated using a range of generic, low cost drugs which are not always effective.

"We plan to use 21st century high-throughput genomics and metabolomics to try and explain the mechanism for the known differences in drug response observed in different ethnic groups and see if we can use this knowledge to improve hypertension treatment.

"This project seeks evidence for selecting the drug treatments in an ethnically-diverse population like the UK. This may involve using non-standard combinations of existing drugs and/or new drugs. If a combination of drugs is required we can use a new technology to put these into a single tablet.

"The ultimate aim is to deliver personalised treatment for high blood pressure, based on a single blood test that captures the genetic and other biological factors that determine how an individual will respond.

"This should reduce the number of consultations, the time required to achieve optimal blood pressure control and contribute to better hypertension control in the UK."

High blood pressure is extremely common within the general population in the UK and worldwide and is a major cause of heart disease, kidney disease and stroke.

One in three of the UK population will require treatment for hypertension at some point in their lives. It's the biggest contributor to the global burden of disease, a burden that is particularly great in ethnic

minorities in the UK and in lower and middle income countries. It is also the commonest reason for people to be prescribed long-term medication by their GP.

Provided by University of Glasgow