

Old gout drug found to benefit heart patients

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(PhysOrg.com) -- A drug which has been used to prevent gout for more than 40 years has now been shown to be an effective treatment for angina, research at the University of Dundee has found.

The Dundee team found that angina sufferers who were given the drug allopurinol were able to exercise longer and harder before they experienced the [chest pain](#) that occurs when the heart is short of oxygen.

The resulting paper, which is published in this month's edition of *The Lancet*, shows that the drug displayed considerable promise as an inexpensive, effective and safe treatment which may one day reduce the need for angioplasty, surgery and hospital admissions.

The team was led by Allan Struthers, Professor of Cardiovascular Medicine at the University's Centre for Cardiovascular & Lung Biology. He said the paper represented an exciting piece of research which he hoped would be able to increase the quality of life for angina sufferers

'Angina Pectoris is an incredibly common condition. It is a manifestation of coronary artery disease, which is the underlying disease which causes most cardiac deaths,' he said.

'Patients with angina have a narrowing of their coronary arteries which are the blood vessels that supply the heart muscle with oxygen. When you have a blockage in your coronary artery, you get chest pain when you try to make your heart work harder by exercising.

'What basically happens is that the heart runs out of oxygen and the heart reacts by producing pain in the chest. This is the same mechanism which produces heart attacks. What we found will surprise most people is that a drug that's used to treat gout is able to make people with angina walk a lot further before they get chest pain. That's because it appears to protect the heart against oxygen deficiency.'

Allopurinol is commonly used to prevent the build up of [uric acid](#) crystals, which cause gout. As uric acid is formed, a byproduct is that oxygen is used up as well. The team hypothesised that in preventing the build up of uric acid, xanthine oxidase inhibitors such as allopurinol would increase the supply of oxygen to the heart muscle.

The study, funded by the British Heart Foundation, showed that, in a double-blind randomised trial, angina sufferers who received allopurinol treatment as opposed to placebo were able to walk for 25 per cent longer before they complained of chest pain and before the heart monitor detected oxygen deprivation.

'Basic science shows that this drug works by inhibiting an enzyme called xanthine oxidase,' continued Professor Struthers. 'Uric acid has a lot of oxygen within its structure. Because allopurinol inhibits the enzyme which forms uric acid, it not only decreases the product uric acid but it also prevents oxygen being wasted in forming uric acid. That's what led to the idea that, as well as decreasing uric acid to prevent gout, it can perhaps increase oxygen supply and so help angina.'

'Allopurinol has been on the market for about 40 years and so it's a cheap drug, one that is obviously very well tolerated with very few side-effects. What we have shown is that it has another property completely different to gout-prevention, which hadn't really been suspected before.'

'We live in an age of austerity and finding new uses for old drugs that are

cheap and safe is very valuable, especially when a disease is as common as angina is.'

Angina affects 6.6 per cent of adult males and 5.6 per cent of adult females in Scotland. Of this number, one in three experience chest pain at least once a week. The paper concludes that treatment with allopurinol should reduce instances of chest pain.

The study looked at 65 patients with chronic angina from the Tayside area. They were asked to exercise on a treadmill whilst hooked up to an ECG monitor. Measurements were made of the point at which the subjects got chest pain, and the point at which the monitors picked up ST depression, a sign that the heart is beginning to be starved of oxygen.

The patients were then randomised to a period of treatment with allopurinol and a period of treatment with placebo. This showed that patients were able to walk 25% further before experiencing chest pain and before showing signs of coronary oxygen deprivation when receiving allopurinol.

Professor Struthers explained that a larger scale study would be necessary to determine the full potential of prescribing allopurinol to angina sufferers.

'This raises lots of other possibilities that we're also hoping to investigate,' he said. 'There are wider implications that we haven't studied yet, but it may well protect the heart in other situations. This might include protecting against heart attacks, but we can't say that for certain at this stage.'

'In terms of treating angina, we need to establish whether it would best be prescribed as well as current angina drugs, or even instead of angioplasty. One day it may replace angioplasty in a proportion of

patients, and even reduce the need for coronary bypass in some patients.

'These are possibilities that we hope to investigate in the future. What is certain is that this is an exciting, possible alternative to expensive treatments such as angioplasty and surgery which are obviously stressful for patients and expensive for the NHS. This is potentially a huge advantage for patients, and the NHS.

'We would like to extend our thanks to the British Heart Foundation, without whom this research would not have been possible.'

Professor Peter Weissberg, Medical Director of the BHF, said, 'There are several effective medicines out there for controlling angina, but it's helpful for doctors to have another option to turn to for patients who don't respond well to existing drugs.

'People with [angina](#) should continue taking medicines as prescribed and talk to their doctor if they have any concerns.

'What is exciting is that it looks as if allopurinol may work by protecting the heart from oxygen starvation. If that is the case, then it raises the possibility that it could help the heart in other situations as well, such as after a [heart](#) attack.'

Provided by University of Dundee

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