

New way to detect heart damage caused by chemotherapy

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The high-tech scanning techniques were enabled by funding from the British Heart Foundation (BHF), and could reveal whether chemotherapy is damaging a person's heart before any symptoms appear.

Doxorubicin is a commonly used type of [chemotherapy drug](#) which slows or stops the growth of cancer cells by blocking an enzyme which [cancer cells](#) need to divide and grow. The drug is used to treat a wide

variety of cancers including; breast cancer, ovarian cancer, bladder cancer and Hodgkin's lymphoma, and has drastically improved survival rates from these diseases.

However, doxorubicin and other chemotherapy drugs can also cause [heart failure](#), where the [heart](#) muscle is damaged and can't pump blood around the body effectively.

Currently, there is no non-invasive way of establishing whether chemotherapy is affecting a person's heart and symptoms, such as breathlessness, usually appear when the heart has already suffered significant damage. This means the damage is only discovered once a person is diagnosed with irreversible heart failure.

The new research found that, in rats, a type of imaging called hyperpolarised MRI can be used to see what's happening deep inside the heart's cells.

If found to work in people, the scanning technique may make it possible for doctors to identify [heart damage](#) early and either change the person onto different chemotherapy drugs if possible or give them an extra drug that might have a protective effect. The scans would allow doctors to see how the [heart muscle cells](#) are producing energy, a process which doxorubicin is thought to affect.

Women treated with the chemotherapy drug have been found to be particularly at risk of developing life-threatening heart failure.

Dr Kerstin Timm, a Postdoctoral researcher and BHF Fellow at the University of Oxford, Department of Physiology, Anatomy and Genetics, said: "Around five per cent of patients treated with doxorubicin will develop heart failure. The problem is that we can't tell if a patient's heart is being damaged by their chemotherapy before it's

too late.

"First and foremost, we need to treat the cancer as effectively as we can. But we need to give these patients a good quality of life after treatment, and that means monitoring them and taking any action before they risk developing heart failure."

More than 3.5 million women in the UK are living with cardiovascular disease and the new research was presented earlier this month at the Global Cardio-oncology Summit in London, as part of BHF efforts to raise awareness of the need to fund lifesaving heart research.

Professor Sir Nilesh Samani, Medical Director at the BHF, said: "To survive [cancer](#), only to develop heart failure is a devastating reality for thousands of people in the UK. We know that some [chemotherapy drugs](#) cause heart failure. But right now doctors have limited ability to detect this early.

"By funding this research, we're hoping to finally find a way to identify heart damage in its earliest stages and help to stop it in its tracks."

Provided by University of Oxford

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