

Heart damage caused by chemotherapy is worse in patients with diabetes

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Heart damage caused by chemotherapy is worse in cancer patients who also have diabetes, according to a study presented today at EuroEcho-Imaging 2016.

"Cardiotoxicity induced by chemotherapy with anthracyclines is being increasingly reported, mainly because a smaller proportion of patients now die from [cancer](#)," said lead author Dr Ana Catarina Gomes, a cardiologist in training at the Hospital Garcia de Orta in Almada, Portugal. "In the coming years this cardiotoxicity looks set to increase the burden of heart failure in cancer survivors."

She continued: "The good news is that cardiotoxicity can be reversible in the early stages before overt heart failure develops. Surveillance programmes are hugely beneficial, particularly in the first year of treatment when up to 80% of the systolic dysfunction develops."

Hospital Garcia de Orta has a surveillance programme, run by Cardiology, Oncology and Haematology, to monitor [cancer patients](#) who receive anthracycline-based chemotherapy. Clinical and echocardiographic evaluation is conducted before, during and after chemotherapy, regardless of whether or not the patient has symptoms. The aim is to detect cardiotoxicity early so that heart failure can be prevented.

In her research Dr Gomes investigates factors that could affect the likelihood of patients having heart damage after treatment with

anthracyclines. The current study assessed the impact of cardiovascular risk factors and type of cancer on the development of cardiotoxicity to help identify patients at greater risk.

The study included all 83 patients in the surveillance programme, of whom 54 had breast cancer, 20 had lymphoma, and nine had gastric cancer. For each patient, data was collected on demographics, cardiovascular risk factors (hypertension, diabetes mellitus, dyslipidaemia, smoking), previous cardiovascular and non-cardiovascular diseases, and type and cumulative dose of anthracyclines.

Echocardiographic evaluation included heart chamber dimensions, systolic and diastolic function, ejection fraction and global longitudinal strain. Measurements were performed before chemotherapy was started, during treatment, and after the end of chemotherapy.

The researchers tested the impact of each risk factor on changes in echocardiographic data from baseline to follow-up. Echocardiographic data were compared between patients with different types of cancer.

A total of 39 patients were treated with doxorubicin and 44 received epirubicin. Cumulative doses were within recommended ranges. Patients were 52 years old on average (range 39 to 65 years) and 78% were female. Some 31% had hypertension, 7% had diabetes, 16% had dyslipidaemia, and 16% were smokers.

Overall, global longitudinal strain and left ventricular ejection fraction progressively decreased and were significantly lower after chemotherapy compared to baseline. Patients with hypertension showed a trend toward greater reductions in ejection fraction. Patients with diabetes had a significantly greater decrease in global longitudinal strain during treatment, despite having baseline levels similar to non-diabetics.

Dr Gomes said: "Subclinical reduction in global longitudinal strain is an early predictor of heart failure and was particularly pronounced in patients with diabetes. It is possible that the trend for greater reduction in patients with hypertension might become statistically significant in a larger study."

Patients with breast cancer had milder cardiotoxic effects compared to those with gastric cancer or lymphoma. After the first cycle of chemotherapy, they had a smaller decrease in ejection fraction and a better diastolic function, while in the middle of treatment they had better systolic function. The differences were independent of the cumulative dose of anthracyclines which was similar in all cancer types.

"We hypothesise that cancers themselves could have direct cardiotoxic effects induced by cytokines," said Dr Gomes. "These cardiotoxic effects may vary with the type of cancer."

She concluded: "Cancer patients should strictly control cardiovascular risk factors with lifestyle changes and, if necessary, with medication. But of course cardiovascular prevention should never postpone the beginning of [chemotherapy](#) since treating cancer is the first priority."

Provided by European Society of Cardiology

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