High cardiovascular hormone / peptide levels in cancer patients linked to shorter survival

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High circulating levels of cardiovascular hormones/peptides in cancer patients are linked to shorter survival, regardless of disease type and stage of progression, reveals research published online in the journal *Heart*.

These chemicals, known as biomarkers, are apparent in the absence of any clinical signs of heart disease or infection, and before the start of anti-cancer treatment, some of which is known to damage heart tissue, say the researchers.

Levels of cardiovascular hormones/peptides have been used to monitor the severity and progression of heart tissue damage as a result of either chemotherapy or radiotherapy. But what has not been clear is whether the cancer itself may affect the levels of these chemicals.

In a bid to try and answer this question, the researchers assessed circulating levels of the cardiovascular hormones NT-proBNP, MR-proANP, MR-proADM, CT-pro-ET and copeptin; a chemical called high sensitive troponin (hsTnT), which regulates heart muscle contractions; and proteins indicative of inflammation, including interleukin 6 (IL6) and C reactive protein (CRP), in 555 people diagnosed with cancer for the first time.

None of the participants had yet undergone any treatment with drugs or radiotherapy that might have damaged their heart tissue. Their progress was then tracked for an average of 25 months.

During the monitoring period, almost a third of the patients (34%; 186) died. Analysis of their blood samples showed that levels of all the hormones measured and hsTnT rose in tandem with disease severity, and in some cases were 100 times higher than would be expected.

All these biomarkers were significantly associated with a heightened risk of death from any cause, which ranged in magnitude from 21% to 54%, and 32% for hsTnT.

These associations were evident, regardless of age, gender, tumour type, stage of disease progression or underlying heart disease.

Furthermore, levels of three of the hormones (NT-proBNP, MR-proANP, MR-proADM) and hsTNT were significantly associated with levels of the inflammatory proteins IL6 and CRP.

The findings suggest that all these biomarkers were indicative of heart tissue damage that was not yet clinically evident, but which was directly linked to the progression of the cancer, say the researchers.

Furthermore, the findings back preliminary research which suggests that heart failure drugs may be beneficial for cancer patients above and beyond helping to curb the potentially damaging side effects of cancer treatment, they add.

In a linked editorial, Alexander Lyon of the NIHR Cardiovascular Biomedical Research Unit, of Imperial College and the Royal Brompton Hospital, London, says that the research raises several interesting questions.

"The first is why are these 'cardiovascular' biomarkers elevated at baseline diagnosis in patients with cancer?," he writes. The hormones indicate how well the heart is functioning while HsTnT indicates

damage.

"This could imply that the cancer is able to induce a direct or indirect toxic effect on the heart or vasculature to a degree that is clinically relevant," he suggests.

"A second issue is what these elevated biomarker levels are predicting...More recently, there is increasing knowledge that in some tumours these biomarkers may drive the malignant and metastatic potential," he writes.

Conceivably, these chemicals may reflect cancer activity and the capacity for spread to other areas of the body or identify pre-existing disease or patients who might be more susceptible to the toxic effects of some cancer treatment, he adds.

The findings open up the potential for new management strategies integrating cardiology and oncology that might improve survival, he says, concluding: "The key next stage will be to reproduce these findings in a prospectively designed multicentre study with larger numbers."

More information: Cardiovascular biomarkers in patients with cancer and their association with all cause mortality, DOI: 10.1136/heartjnl-2015-307848

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