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Project: Cardiac toxicity in patients treated with hypofractionated radiation treatment for breast cancer in Christchurch

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Introduction:

Radiation treatment is standard practice after a breast cancer lump is removed and in some cases, is also given after the whole breast is removed. Traditionally, radiation is given over 25 sessions. This is called conventional fractionation. Recent high-level evidence has shown that radiation given over 16 sessions with a slightly larger dose per day results in equivalent breast cancer outcomes. This is called hypofractionation. Hypofractionation is beneficial for patients and hospital departments as it means shorter treatment times and less demand on radiotherapy resources. There is some concern however, that radiation given using the hypofractionation schedule could increase damage to the arteries of the heart 10 or more years after the treatment and this could cause or accelerate the development of ischaemic heart disease. This is an area not well studied as it requires followup times of longer than 10 years, longer than is usual for many trials. This shows a very low rate of ischaemic cardiac events in both the groups.

Aim:

To elicit the incidence of cardiac disease in patients treated with Hypofractionated Radiation Therapy between 2003-2008 in Christchurch hospital and compare this with a similar cohort of patients treated with Conventionally Fractionated Radiation Therapy.

Method:

We studied the incidence of ischaemic heart disease in patients treated with hypofractionated radiotherapy in Christchurch Hospital for breast cancer between 2003-2008 and compared it with a similar cohort of patients who received conventional fractionation. We gathered information on patient demographics, tumour characteristics and ischaemic heart disease risk factors. The median follow up time for both groups is greater than 10 years. To find the incidence of ischaemic heart disease, we searched cardiology databases for myocardial infarction (heart attacks), angina (chest pain caused by narrowed heart arteries), coronary angiography (narrow heart arteries on testing) and stent insertion to open narrowed arteries.

Results:

We found that the rates of ischaemic heart disease in our population were low. The incidence was 17/220 (7.7%) for all outcomes for the conventional fractionation group and 12/281 (4.2%) for all outcomes in the hypofractionation group. Of surprise, however was the fact that over half of the patients we studied had at least one risk factor for heart disease.

Conclusion:

Hypofractionation does not appear to cause greater late cardiac toxicity than conventional fractionation. Screening of patients prior to radiation will enable identification of those at increased risk of cardiac disease who may benefit from treatment of cardiac risk factors.