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Early Career Women's Heart and Brain Health Chair

Institution: Women's College Research Institute

Project title: *Characterising Heart and Mind Health Post-Chemotherapy in Women with Breast Cancer*

Health Problem/Issue

My previous research showed that breast cancer survivors are at higher risk of heart disease after their cancer treatment. We do not know how to detect this heart disease before the heart gets weak. Breast cancer patients also have more diabetes, higher blood pressure, and higher cholesterol. They are also more likely to be overweight. These conditions can get worse after breast cancer. When these conditions combine together, the person is said to have the "metabolic syndrome". Women also get more stressed and anxious after being diagnosed with breast cancer. The stress and anxiety may be affected by their life experiences as women. It can also be affected by being an ethnic minority, or having less education.

Many breast cancer patients who get chemotherapy complain about problems with memory and concentration. We also suspect that breast cancer survivors are at higher risk of an abnormal heart rhythm called atrial fibrillation. It is well known that atrial fibrillation increases the chance of stroke. In general, we know that people with weaker hearts and atrial fibrillation have more memory and concentration problems. However, we do not know if the heart disease caused by chemotherapy is linked to these memory and concentration problems.

The Objectives

1. To study if certain blood tests can help us detect heart disease from chemotherapy at an earlier stage so we can prevent the heart from becoming weak.
2. To study how life experiences of women and being an ethnic minority affect the chances of getting the metabolic syndrome after breast cancer.
3. To study if breast cancer patients who get weak hearts or atrial fibrillation after chemotherapy have more difficulties with memory and concentration

The Approach

I will invite 200 women who get chemotherapy for breast cancer to join this study. Blood samples will be taken to measure possible signs that the heart is becoming weaker. We will take pictures of their hearts to measure its strength. Also, we will use specially designed questionnaires to measure their depression, anxiety and life experiences as women. Using sophisticated tests, we will measure their memory and concentration. We will then analyse this information to see how these issues fit with each other.

Unique Factors

This study will be one of the largest to study new blood tests to detect heart damage from chemotherapy before it becomes weak. Also, I am not aware of any research that has studied how women's life experiences affect their chances of getting metabolic syndrome after breast cancer. There has been lots of concern about memory and concentration problems after chemotherapy but not much research about the role of heart problems in causing it.

How the project is relevant to the objectives of the initiative

1 in 8 Canadian women will develop breast cancer during their life. Many women are living longer after their breast cancer diagnosis because of early detection and better treatment. As a result, 1% of all Canadian women living today is a breast cancer survivor.

I hope that this study will provide us with important information to help keep women's hearts and brains healthy after chemotherapy for breast cancer.

Also, chemotherapy is a situation where we know when someone is going to get something that harms the heart, so it gives a chance to learn about how women's hearts respond to injury. This can teach us lessons that we can apply to other situations when the heart gets damaged, such as a heart attack.