

Breast cancer and oestrogen

Breast cancer will affect one in nine Australian women before she reaches the age of 85, with around 3,100 Victorians diagnosed with the disease every year. There are different types of breast cancer. Around 70 per cent are sensitive to the female sex hormone oestrogen. These cancers are called hormone receptor positive cancers.

Paradoxically, breast cancer is more common in postmenopausal women, when the ovaries no longer produce oestrogens. It appears that oestrogens are then made in fat tissue, including within the breast. Endocrine therapy is a type of medication that stops oestrogen production and/or blocks its actions on tumour cells.

Breast cancer and women of childbearing age

Breast cancer in women before the age of 25 is rare. However, the risk of developing breast cancer increases with age. Hormone-positive breast tumours that develop prior to menopause are largely dependent on oestrogens produced by the ovaries for growth. In these cases, therapy includes endocrine therapy or chemotherapy, or both.

Ovarian suppression, either through surgical removal of the ovaries or by giving a gonadotropin-releasing hormone, which will lead to the temporary decrease in oestrogen production from the ovaries, may be effective treatment for hormone-positive breast tumours.

Each person should make a decision about whether or not to have chemotherapy in consultation with their doctor. The decision should be made after all available information on the benefits and risks has been fully discussed.

Oestrogen in the postmenopausal woman

As mentioned above, breast cancer is most common in postmenopausal women, and the majority of these cancers are hormone receptor positive. Breast tissue contains fat cells. These cells make an enzyme called aromatase, which produces oestrogens. In normal breast tissue, the amount of aromatase is carefully regulated.

As a woman ages, the fat cells of her breasts tend to produce greater and greater amounts of aromatase, which in turn increases the amount of local oestrogens. These locally produced oestrogens seem to play a role in triggering breast cancer in postmenopausal women. Once established, the tumour further increases oestrogen levels, which helps it to grow. Immune cells that flock to the tumour also seem to boost oestrogen production.

Recent studies have also identified a link between obesity and oestrogen production. These findings are supported by data demonstrating that obesity carries a two-fold increased risk of developing breast cancer in older women.

Endocrine therapy

Medications which block oestrogen production and/or action are classified as endocrine therapy, for example, Tamoxifen. These are often used after surgery to remove the hormone responsive tumour, to lower the risk of recurrence, although they can have a number of side-effects. For most women, the benefits far outweigh the risks.

More recently, medications have been developed to stop oestrogens by blocking their production. Aromatase inhibitors (AIs), including letrozole, prevent aromatase from producing oestrogens and so reduce the amount of oestrogens within the breast. AIs have been shown to have more benefits and fewer serious side-effects than tamoxifen.

Possible side effects of aromatase inhibitors include:

- Hot flushes
- Joint stiffness
- Osteoporosis.

Current research is focusing on newer compounds designed to block oestrogen production in the breast only, as oestrogens are still needed for, among other things, healthy bones.

Breast cancer and hormone replacement therapy

Menopause can trigger unpleasant side effects such as hot flushes and vaginal dryness. Hormone replacement therapy (HRT) eases the symptoms by boosting sex hormone levels. It also reduces the risk of osteoporosis and heart disease.

Since some breast cancers depend on oestrogens, women taking HRT for a long time (more than five years) have a 0.3-fold increased risk. Women who undergo HRT for shorter periods of time (such as two years) have the same risk of breast cancer as women who haven't used HRT. The health benefits of HRT in women early post menopause may outweigh the risks in many cases.

Where to get help

- Your doctor
- Cancer Council Victoria Information and Support Service Tel. 131 120

Things to remember

- Around 70 per cent of breast cancers are sensitive to the female sex hormone oestrogen.
- The growth of cancer can be minimised by taking drugs that block the production and action of oestrogens in the breasts.
- Side effects of endocrine therapy include hot flushes, joint stiffness and osteoporosis.

This page has been produced in consultation with, and approved by:

Prince Henry's Institute of Medical Research

Content on this website is provided for education and information purposes only. Information about a therapy, service, product or treatment does not imply endorsement and is not intended to replace advice from your doctor or other registered health professional. Content has been prepared for Victorian residents and wider Australian audiences, and was accurate at the time of publication. Readers should note that, over time, currency and completeness of the information may change. All users are urged to always seek advice from a registered health care professional for diagnosis and answers to their medical questions.

For the latest updates and more information, visit www.betterhealth.vic.gov.au

Copyright © 1999/2011 State of Victoria. Reproduced from the Better Health Channel (www.betterhealth.vic.gov.au) at no cost with permission of the Victorian Minister for Health. Unauthorised reproduction and other uses comprised in the copyright are prohibited without permission.