Hormonal Replacement Therapy in Oncology

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Description

Hormonal therapy for cancer is one of the major methods of medical oncology (pharmacotherapy for cancer), along with cytotoxic chemotherapy and therapy (bio therapeutics). Exogenous or external delivery of specific hormones, particularly steroid hormones, or medications that limit the production or function of such hormones is used to control the endocrine system (hormone antagonists). Because steroid hormones are significant drivers of gene expression in cancer cells, altering their levels or activity can cause tumors to stop growing or even die. Hormonal therapy can also include surgical removal of endocrine organs such as orchiectomy and oophorectomy.Hormonal therapy is used to treat malignancies of the breast, prostate, endometrial, and adrenal cortex, which are all hormonally responsive tissues. Hormonal therapy may also be used to treat paraneoplastic diseases or to alleviate symptoms linked with cancer and chemotherapy, such as anorexia. The use of the selective estrogen-response modulator tamoxifen for the treatment of breast cancer is perhaps the most well-known example of hormone therapy in oncology, while another family of hormonal drugs, aromatase inhibitors, is now playing an increasingly important role in that illness.

Aromatase inhibitors are a type of medicine that is commonly used to treat breast cancer in postmenopausal women. Although oestrogen production in the ovaries stops after menopause, oestrogen is still produced in other tissues thanks to the action of the enzyme aromatase on androgens produced by the adrenal glands. When the enzyme aromatase is inhibited, oestrogen levels in postmenopausal women can drop to dangerously low levels, causing hormone-responsive cancer cells to stop growing and/or die.

Letrozole and anastrozole are aromatase inhibitors that have been demonstrated to be more effective than tamoxifen in the first-line treatment of postmenopausal women with breast cancer. Exemestane is an irreversible aromatase in activator that is superior to megestrol acetate for the treatment of tamoxifen-refractory metastatic breast cancer and does not appear to have the osteoporosis-promoting side effects associated with other medications in this class.

Aromatase and other enzymes involved in steroid hormone synthesis in the adrenal glands are inhibited by aminoglutethimide. It was once used to treat breast cancer, but more selective aromatase inhibitors have subsequently taken its place. It can also be used to treat hyper adrenocortical disorders such Cushing's disease and adrenocortical carcinoma hyperaldosteronism.

Gonadotropin-Releasing Hormone (GNRH) analogues can be used to cause chemical castration, which is the total suppression of oestrogen and progesterone production in the female ovaries or testosterone production in the male testes. This is due to a negative reaction effect caused by these hormones' constant stimulation of the pituitary gland. GNRH analogues such as leuprorelin and goserelin are largely utilized to treat hormone-responsive prostate cancer. Because the initial endocrine reaction to GNRH analogues is really gonadal steroid hyper secretion, hormone receptor antagonists like flutamide are commonly preventing a transient increase in tumour growth. Breast and prostate cancers are two different types usually treated with hormone therapy. Furthermost breast cancers have either estrogen (ER) or progesterone (PR) receptors, or both, these hormones are required to grow and spread.