

Abstract

Hormone therapy, also known as endocrine therapy, is a medical treatment that uses hormones or hormone-blocking drugs to treat various health conditions, particularly hormone-related cancers like breast, prostate, and endometrial cancer. By manipulating hormone levels in the body, hormone therapy can slow or stop the growth of certain types of cancer that rely on hormones such as estrogen and testosterone for growth. In addition to cancer treatment, hormone therapy is used to manage symptoms of menopause, gender-affirming care, and other medical conditions. This article explores the mechanisms, types, uses, benefits, side effects, and considerations of hormone therapy, highlighting its importance in modern medicine.

Keywords: Hormone therapy; Endocrine therapy; Breast Cancer; Prostate Cancer; Menopause; Gender-Affirming Care; Estrogen; Testosterone; Cancer Treatment; Medical Conditions; Side Effects

Introduction

Hormone therapy has become an essential part of medical treatment, particularly for conditions related to hormone imbalances such as certain cancers [1], menopause, and gender dysphoria. By altering or blocking the action of hormones in the body, hormone therapy can slow disease progression, alleviate symptoms, and improve quality of life. Though it is a powerful treatment option, hormone therapy is not without its risks and side effects. This article explores the various types of hormone therapy, its applications, the conditions it treats, and the considerations patients must take into account when undergoing this treatment [2].

What is Hormone Therapy?

Hormone therapy involves using synthetic hormones, hormone-blocking medications, or other interventions to alter the normal hormonal balance in the body. The goal is typically to manipulate the effects of hormones on specific cells or organs to treat or manage health conditions. In oncology [3], for instance, hormone therapy can block the production or action of hormones like estrogen or testosterone, which fuel the growth of certain cancers. In other cases, hormone therapy aims to replace or balance hormone levels to alleviate symptoms or manage health issues like menopause or gender dysphoria [4].

Types of Hormone Therapy

Hormone therapy can be broadly classified into several types, depending on its purpose and the method used to administer it. The most common types include:

Estrogen therapy (ET): Used primarily to treat menopausal symptoms in women, such as hot flashes, night sweats, and vaginal dryness. Estrogen therapy helps replace the estrogen that decreases during menopause, alleviating many discomforts associated with hormonal changes [5].

Selective estrogen receptor modulators (SERMs): Drugs like tamoxifen are commonly used in the treatment of hormone-receptor-positive breast cancer. These drugs block estrogen receptors on cancer cells, preventing estrogen from stimulating tumor growth. SERMs are also used to prevent breast cancer in high-risk women.

Aromatase inhibitors (AIs): Drugs like letrozole, anastrozole, and exemestane lower the production of estrogen in the body. AIs are typically used in postmenopausal women with hormone-receptor-positive breast cancer to prevent the recurrence of the disease [6].

Anti-androgens: Used to block the action of testosterone, these drugs are commonly used in the treatment of prostate cancer, as testosterone can stimulate the growth of prostate cancer cells. Drugs like enzalutamide and bicalutamide are examples of anti-androgens [7].

Luteinizing hormone-releasing hormone (LHRH) agonists: Medications such as leuprolide or goserelin reduce the production of estrogen and testosterone by acting on the pituitary gland. These are often used in the treatment of prostate and breast cancer.

Progesterone therapy: In some cases, synthetic progesterone may be used to treat certain types of uterine cancers or to manage abnormal uterine bleeding. Progesterone can also be used in combination with estrogen in hormone replacement therapy (HRT) to reduce the risk of endometrial cancer.

Gender-affirming hormone therapy: For individuals undergoing gender transition, hormone therapy can involve the administration of estrogen to feminize the body or testosterone to masculinize it. These treatments are part of the broader process of gender-affirming care to help individuals align their physical characteristics with their gender identity.

Applications of Hormone Therapy

Hormone therapy is widely used in the treatment of cancers that are sensitive to hormones. Some of the most common cancers treated with hormone therapy include:

Breast cancer: Hormone receptor-positive breast cancer is one of the most common types of breast cancer. Estrogen or progesterone
