Manitoba Prostate Cancer SUPPORT GROUP

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Newsletter



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Thanks!

Next meeting: July 21, 2016 Members Forum Topic: A panel discussion covering various prostate cancer treatments, followed by Q & A. Location: Cindy Klassen Recreation Complex 999 Sargent Avenue Time: 7:00 to 9:00 pm Snacks and juice provided.



The Manitoba Prostate Cancer Support Group does not recommend treatment modalities, medications, or physicians.

MPCSG – active since 1992.

Thought of The Day People who wonder whether the glass is half empty or half full miss the point. The glass is refillable.

www.manpros.org

Understanding Hormone Therapy For Prostate Cancer

July 2016

Hormones are substances made by glands in the body that function as chemical signals. They affect the actions of cells and tissues at various locations in the body, often reaching their targets by traveling through the bloodstream.

Androgens (male sex hormones) are a class of hormones that control the development and maintenance of male characteristics. Testosterone and dihydrotestosterone (DHT) are the most abundant androgens in men. Almost all testosterone is produced in the testicles; a small amount is produced by the adrenal glands. Prostate cancer cells may also have the ability to produce testosterone.

How do hormones stimulate the growth of prostate cancer?

Androgens are required for normal growth and function of the prostate, a gland in the male reproductive system that helps make semen. Androgens are also necessary for prostate cancers to grow. Androgens promote the growth of both normal and cancerous prostate cells by binding to and activating the androgen receptor, a protein that is expressed in prostate cells. Once activated, the androgen receptor stimulates the expression of specific genes that cause prostate cells to grow.

Early in their development, prostate cancers need relatively high levels of androgens to grow. Such prostate cancers are referred to as androgen dependent or androgen sensitive because treatments that decrease androgen levels or block androgen activity can inhibit their growth. Most prostate cancers eventually become "castration resistant," which means that they can continue to grow even when androgen levels in the body are extremely low or undetectable.

What types of hormone therapy are used for prostate cancer? Hormone therapy for prostate cancer can block the production and use of androgens. Currently available treatments can:

- => Reduce androgen production by the testicles
- => Block the action of androgens in the body
- => Block the production of androgens throughout the body

Treatments that reduce androgen production by the testicles are the most commonly used hormone therapies for prostate cancer. These include: Orchiectomy, a surgical procedure to remove one or both testicles. Removal of the testicles can reduce the level of testosterone in the blood by 90 to 95 percent. This type of treatment, called surgical castration, is permanent and irreversible. A type of orchiectomy called subcapsular orchiectomy removes only the tissue in the testicles that produces androgens, rather than the entire testicle.

Drugs called luteinizing hormonereleasing hormone (LHRH) agonists, which prevent the secretion of a synthetic proteins that are structurally similar to LHRH and bind to the LHRH receptor in the pituitary gland. (LHRH is also known as gonadotropin-releasing hormone or GnRH, so LHRH agonists are also called GnRH agonists.)

Normally, when androgen levels in the body are low, LHRH stimulates the pituitary gland to produce luteinizing hormone, which in turn stimulates the production of androgens by the testicles. LHRH agonists, like the body's own LHRH, initially stimulate the production of luteinizing hormone. However, the continued presence of high levels of LHRH agonists actually causes the pituitary gland to stop producing luteinizing hormone, which prevents testosterone from being produced. Treatment with an LHRH agonist is called medical castration (sometimes called chemical castration) because it uses drugs to lower androgen levels in the body to the same extent as surgical castration (orchiectomy). But, unlike orchiectomy, the effects of these drugs on androgen production are reversible. Once treatment is stopped, androgen production usually resumes.

LHRH agonists are given by injection or are implanted under the skin. LHRH agonists that are approved to treat prostate cancer in the United States include leuprolide, goserelin, and buserelin.

When patients receive an LHRH agonist for the first time, they may experience a phenomenon called "testosterone flare." This temporary increase in testosterone level occurs because LHRH agonists briefly cause the pituitary gland to secrete extra luteinizing hormone before blocking its release. The flare may worsen clinical symptoms (for example, bone pain, ureter or bladder outlet obstruction, and spinal cord compression), which can be a particular problem in men with advanced prostate cancer. The increase in testosterone is usually countered by giving another type of hormone therapy called antiandrogen therapy (described below) along with an LHRH agonist for the first few weeks of treatment.

Drugs called LHRH antagonists, which are another form of medical castration. LHRH antagonists (also called GnRH antagonists) act by preventing LHRH from binding to its receptors in the pituitary gland, which in turn prevents the secretion of luteinizing hormone, causing the body's androgen levels to drop. Unlike LHRH agonists, LHRH antagonists do not cause a testosterone flare. One LHRH antagonist, degarelix, is *(Continued on page 3)*

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currently approved to treat advanced prostate cancer in the United States. It is given by injection.

Treatments that block the action of androgens in the body include: Antiandrogens, which are drugs that compete with androgens for binding to the androgen receptor. By competing for binding to the androgen receptor, antiandrogens reduce the ability of androgens to promote prostate cancer cell growth. Because antiandrogens do not block androgen production, they are rarely used on their own to treat prostate cancer. Instead, they are used in combination with orchiectomy or an LHRH agonist. Use of an antiandrogen drug in combination with orchiectomy or an LHRH agonist is called combined androgen blockade, complete androgen blockade, or total androgen blockade. Antiandrogens that are approved in the United States to treat prostate cancer include flutamide, enzalutamide, bicalutamide, and nilutamide. Antiandrogens are given as pills to be swallowed.

Treatments that block the production of androgens throughout the body include: Drugs that prevent the production of androgens by the adrenal glands and prostate cancer cells themselves, as well as by the testicles. Neither medical nor surgical castration blocks the adrenal glands and prostate cancer cells from producing androgens. Even though the amounts of androgens they produce are small, these amounts can be enough to support the growth of some prostate cancers.

Drugs that prevent the adrenal glands (as well as the testicles and prostate cancer cells) from making androgens, which are called androgen synthesis inhibitors, can lower testosterone levels in a man's body to a greater extent than any other known treatment. These drugs block testosterone production by inhibiting an enzyme called CYP17. This enzyme, which is found in testicular, adrenal, and prostate tumor tissues, plays a central role in allowing the body to produce testosterone from cholesterol.

Three androgen synthesis inhibitors are approved in the United States. All are given as pills to be swallowed. Two of these, ketoconazole and aminoglutethimide, are approved for indications other than prostate cancer but are sometimes used as second-line treatments for castration-resistant prostate cancer. The third, abiraterone acetate, is approved to treat metastatic castration-resistant prostate cancer.

How is hormone therapy used to treat prostate cancer?

Hormone therapy may be used in several ways to treat prostate cancer, including:

Adjuvant hormone therapy. Hormone therapy that is given after other primary treatments to lower the risk that prostate cancer will come back is called adjuvant hormone therapy. Men with early-stage prostate cancer that has an intermediate or high risk of recurrence may receive adjuvant hormone therapy after radiation therapy or prostatectomy (surgery to remove all or part of the prostate gland). Factors that are used to determine the risk of prostate cancer recurrence include the tumor's grade (as measured by the Gleason score), the extent to which the tumor has spread into surrounding tissue, and whether or not tumor cells are found in nearby lymph nodes. Men who have adjuvant hormone therapy after prostatectomy live longer without having a recurrence than men who have prostatectomy alone, but they do not live longer overall. Men who have adjuvant hormone therapy after external beam radiation therapy for prostate cancer live longer, both overall and without having a recurrence, than men who are treated with radiation therapy alone.

Hormone therapy given before other treatments is called neoadjuvant hormone therapy. Men with earlystage prostate cancer that has an intermediate or high risk of recurrence often receive hormone therapy before or during radiation therapy, in addition to receiving hormone therapy after radiation therapy. Men who receive hormone therapy in combination with radiation therapy live longer overall than men who receive radiation therapy alone. The use of neoadjuvant hormone therapy (alone or in combination with chemotherapy) before prostatectomy has not been shown to prolong survival and is not a standard treatment.

Hormone therapy alone. Hormone therapy is sometimes used alone for palliation or prevention of local symptoms in men with localized prostate cancer who are not candidates for surgery or radiation therapy. Such men include those with a limited life expectancy, those with advanced local tumor stage, and/or those with other serious health conditions.

Hormone therapy used alone is also the standard treatment for men who have a prostate cancer recurrence documented by CT, MRI, or bone scan after treatment with radiation therapy or prostatectomy. Hormone therapy is often recommended for men who have a "biochemical" recurrence-a rapid rise in prostatespecific antigen (PSA) levelespecially if the PSA level doubles in fewer than 12 months. However, a rapid rise in PSA level does not necessarily mean that the prostate cancer itself has recurred. The use of hormone therapy in the case of a biochemical recurrence is somewhat controversial.

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Finally, hormone therapy used alone is also the standard treatment for men who are found to have metastatic disease (i.e., disease that has spread to other parts of the body) when their prostate cancer is first diagnosed. Whether hormone therapy prolongs the survival of men who have been newly diagnosed with advanced disease but do not yet have symptoms is not clear. Moreover, because hormone therapy can have substantial side effects, some men prefer not to take hormone therapy before symptoms develop.

The length of treatment with hormone therapy for prostate cancer depends on a man's risk of recurrence, which is based on the clinical stage (the amount or spread of cancer in the body), Gleason score (system of grading prostate cancer tissue based on how it looks when examined under a microscope), and PSA level. For men with intermediate-risk prostate cancer, hormone therapy is generally given for 4 to 6 months; for men with high-risk disease it is generally given for 2 to 3 years.

Many prostate cancers that initially respond to hormone therapy with LHRH agonists, LHRH antagonists, or orchiectomy eventually stop responding to this treatment. This is referred to as castration-resistant prostate cancer. Castration-resistant prostate cancers need much lower levels of androgen to grow than androgen-sensitive cancers.

Several potential mechanisms may allow prostate cancer cells to grow even when androgen levels are very low, including increased production of androgen receptor molecules within the cells (either through an increase in the expression of the androgen receptor gene or an increase in the number of copies of the androgen receptor gene per cell), a change in the androgen receptor gene such that it produces a more active protein, and changes in the activities of proteins that help control the function of the androgen receptor.

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Doctors cannot predict how long hormone therapy will be effective in suppressing the growth of any individual man's prostate cancer. Therefore, men who take hormone therapy for more than a few months will be regularly tested to determine the level of PSA in their blood. An increase in PSA level may indicate that a man's cancer has started growing again. A PSA level that continues to increase while hormone therapy is successfully keeping androgen levels extremely low is an indicator that a man's prostate cancer has become resistant to the hormone therapy that is currently being used.

What are the treatment options for castration-resistant prostate cancer? Treatments for castration-resistant prostate cancer include:

- Antiandrogens, such as flutamide, bicalutamide, nilutamide, and enzalutamide
- Androgen synthesis inhibitors, such as ketoconazole, aminoglutethamide, and abiraterone acetate
- Immunotherapy using a cell-based vaccine called sipuleucel-T. This vaccine uses a man's own immune cells to fight metastatic prostate cancer that has become resistant to hormone therapy.

Chemotherapy, most commonly with the drug docetaxel. Another drug, cabazitaxel, is approved for the treatment of metastatic castrationresistant prostate cancer that was previously treated with docetaxel. Radium 223 dichloride, a radiopharmaceutical approved to treat men with castration-resistant prostate cancer that has metastasized (spread) to the bones and is causing symptoms but has not spread to other organs. This drug collects in certain areas of bone, such as bone metastases, and gives off radiation that kills cancer cells.

Men with castration-resistant prostate cancer who receive these treatments will continue to take first-line hormone therapy (e.g., an LHRH agonist) to avoid an increase in testosterone level, which may lead to tumor progression in some men.

Randomized clinical trials have demonstrated that treatment with abiraterone acetate or enzalutamide prolongs survival among men with metastatic castration-resistant prostate cancer, whether or not they have previously received chemotherapy.

What are the side effects of hormone therapy for prostate cancer?

Both medical castration and surgical castration greatly reduce the amount of androgens produced by the body. Because androgens are used by many other organs besides the prostate, medical or surgical castration can have a wide range of side effects such as: loss of interest in sex (lowered libido); erectile dysfunction; hot flashes; loss of bone density; bone fractures; loss of muscle mass and physical strength; changes in blood lipids; insulin resistance; weight gain; mood swings; fatigue; growth of breast tissue (gynecomastia).

Antiandrogens can cause diarrhea, breast tenderness, nausea, hot flashes, loss of libido, and erectile dysfunction. The antiandrogen flutamide may damage the liver.

Drugs that stop the adrenal glands from making androgens (i.e., the androgen synthesis inhibitors ketoconazole, aminoglutethimide, and abiraterone acetate) can cause (Continued from page 4)

diarrhea, itching and rashes, fatigue, erectile dysfunction (with long-term use), and, potentially, liver damage.

Estrogens avoid the bone loss seen with other kinds of hormone therapy, but they increase the risk of cardiovascular side effects, including heart attacks and strokes. Because of these side effects, estrogens are rarely used today as hormone therapy for prostate cancer.

Having adjuvant hormone therapy after radiation therapy worsens some adverse effects of radiotherapy, particularly sexual side effects and vitality. Many of the side effects of ongoing hormone therapy also become stronger the longer a man takes hormone therapy.

What can be done to reduce the side effects of hormone therapy for prostate cancer?

Men who lose bone mass during longterm hormone therapy may be prescribed drugs to slow or reverse this loss. The drugs zoledronic acid and alendronate (which belong to a class of drugs called bisphosphonates) increase bone mineral density in men who are undergoing hormone therapy. A newer drug, denosumab, which increases bone mass through a different mechanism than bisphosphonates, was approved in 2011 for use in men undergoing hormone therapy for prostate cancer. However, bisphosphonates and denosumab are associated with a rare but serious side effect called osteonecrosis of the jaw.

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Exercise may help reduce some of the side effects of hormone therapy, including bone loss, muscle loss, weight gain, fatigue, and insulin resistance. Several clinical trials are examining whether exercise is an effective strategy to reverse or prevent side effects of hormone therapy for prostate cancer.

The sexual side effects of hormone therapy for prostate cancer can be some of the most difficult to deal with. Erectile dysfunction drugs such as sildenafil citrate (Viagra) do not usually work for men undergoing hormone therapy because these drugs do not affect loss of libido (sexual desire).

When most men stop taking a reversible hormone therapy, the sexual and emotional side effects caused by low levels of androgens will eventually go away. However, if a man has been taking hormone therapy for many years, these side effects may not disappear completely. Some physical changes that have developed over time, such as bone loss, will remain after stopping hormone therapy. Patients should be sure to tell their doctor about all medications they are taking, including over-the-counter herbal medicines. Some herbal medicines interact with drugmetabolizing enzymes in the body, which can adversely affect hormone therapy.

Does a reversible hormone therapy have to be taken continuously for it to be effective?

Researchers have investigated whether a technique called intermittent androgen deprivation can improve the effectiveness of hormone therapy for prostate cancer—that is, whether it delays the development of hormone resistance. With intermittent androgen deprivation, hormone therapy is given in cycles, with breaks between drug administrations, rather than continuously. An additional potential benefit of this approach is that the temporary break from the side effects of hormone therapy may improve a man's quality of life.

Two clinical trials of intermittent versus continuous androgen deprivation found that intermittent therapy reduced some of the side effects of hormone therapy, including those involving sexual function. However, the trials did not show any improvement in overall survival with intermittent therapy.

Source: National Cancer Institute

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Disclaimer Note: The Manitoba Prostate Cancer Support Group newsletter and website are strictly news and information about prostate cancer. They do not provide medical advice, diagnosis or treatment. The content is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Always seek the advice of your physician or other qualified health provider with any questions you may have regarding a medical condition. Never disregard professional medical advice or delay in seeking it because of something you have read in this newsletter or on our website.

Cryotherapy

July 2016

Prostate cancer is a disease of the male reproductive system. It is the second most common type of cancer among men in the US. In 2015, there were about 220,800 new cases of the disease and 27,540 deaths from prostate cancer, according to the National Institutes of Health. An estimated one in every seven men will be diagnosed with the disease during their lifetime, but developing the disease is rare before the age of 40. The average age at the time of diagnosis is about 66, and

the majority of patients are diagnosed after that age. In many cases, patients are only diagnosed during an autopsy after a death related to some other cause.

After the diagnosis and staging of the disease, physicians determine a choice of treatment based on patients' age and expected lifespan, additional severe health conditions, patients' and

physicians' options and opinions about each treatment option and its possible side effects, as well as probability of curing the cancer. Prostate cancer treatment options include expectant management (watchful waiting) or active surveillance, surgery, radiation therapy, hormone therapy, chemotherapy, vaccine treatment, bone-directed treatment, and cryotherapy.

Cryotherapy as a Treatment Option for Patients with Prostate Cancer

Cryotherapy, also known as cryosurgery or cryoablation, is a type of treatment used in many types of cancer and other diseases. In patients with prostate cancer, cryotherapy consists of freezing the cancerous cells in the prostate. "Most doctors do not use cryosurgery as the first treatment for prostate cancer, but it is sometimes an option if the cancer has come back after other treatments. As with brachytherapy, this may not be a good option for men with large prostate glands," explain the American Cancer Society, adding that cryotherapy is less invasive than radical prostatectomy surgery and related to smaller loss of blood, shorter hospital stay, shorter recovery period, and less pain.



During the procedure, a transrectal ultrasound (TRUS) is used to guide several hollow probes (needles) through the skin between the anus and scrotum and into the prostate. Then, ice balls are created with very cold gases passed through the needles in order to destroy the prostate. "To be sure the prostate is destroyed without too much damage to nearby tissues, the doctor carefully watches the ultrasound images during the procedure." The patient does not feel any pain since the lower half of the body is numbed with a spinal or epidural anesthesia, or the patient is put to sleep under general anesthesia. Physicians also place a catheter in the urethra during the procedure to circulate warm saltwater and prevent it from freezing.

Benefits and Risks of Cryotherapy in Prostate Cancer Patients

There isn't much information about the long-term effectiveness of cryotherapy, but it is known to be less effective than radiation therapy. However, the cryotherapy is able to freeze and kill the cancer cells in the prostate. It is particularly indicated as primary treatment in cases of earlystage cancer confined to the prostate

> or as salvage therapy, after other cancer treatment to stop the growth of recurrent prostate cancer. The side effects of the treatment are usually worse in patients who previously underwent radiation therapy. Patients often experience soreness, swelling of the penis or scrotum and blood in urine right after the procedure.

"Freezing often damages the nerves near the prostate that control erections.

Erectile dysfunction is more common after cryosurgery than after radical prostatectomy," adverts the ACS. "Urinary incontinence (having problems controlling urine) is rare in men who have cryosurgery as their first treatment for prostate cancer, but it is more common in men who have already had radiation therapy. After cryosurgery, less than 1% of men develop a fistula (an abnormal connection) between the rectum and bladder. This rare but serious problem can allow urine to leak into the rectum and often requires surgery to repair."

Source: Prostate Cancer News Today

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Most experts agree that prostatespecific antigen (PSA) screening should be used in conjunction with other information (for example, family history, race and age) to assess the overall likelihood that prostate cancer is present, and it should be performed following a discussion with the patient about its benefits and risks.

Researchers have also developed several ways to improve the PSA test's accuracy, although none of these takes the place of a simple PSA measurement for screening. These improvements include assessments of:

PSA density

This measurement takes the size of a man's prostate into account when evaluating his PSA level. This measurement helps doctors distinguish between benign prostatic enlargement and prostate cancer. The higher the

Prostate cancer is a malignant disease of the male reproductive system. The prostate is a gland present in men's bodies, below the bladder, near the rectum and around the urethra, and the disease occurs when the cells in the prostate start to grow out of control. The main function of the prostate is to produce a fluid that is expelled with the sperm during ejaculation, making the semen more liquid. Due to the location of the gland, prostate cancer affects both the reproductive and urinary systems.

Treatment options for prostate cancer depend on the patient's age and expected lifespan, other severe diseases, cancer stage and grade, patients' and physicians' feeling and opinions regarding treatment and potential side effects, as well as the probability of curing the cancer. Current treatment options include

Improving PSA Test Accuracy

PSA density, the greater the chance of cancer.

PSA velocity

This measurement takes into account annual changes in PSA values, which rise more rapidly in men with prostate cancer than in men without the disease.

Percent free PSA or complexed PSA

PSA in the blood is either bound (attached) to proteins (known as complexed) or unbound (known as free). PSA assays usually measure the total PSA (both free and complexed). Other assays measure the percentage of free PSA or the percentage of complexed PSA. Compared with men who have BPE, men with prostate cancer have a higher percentage of complexed PSA and a lower percentage of free PSA. Research suggests that determining the ratio of free to total PSA in the blood helps distinguish

Cabazitaxel

active surveillance, surgery, radiation therapy, cryotherapy, hormone therapy, chemotherapy, and bone-directed treatment.

How Cabazitaxel Works

Cabazitaxel is one of the drugs used in chemotherapy, and it is classified as a taxane chemotherapy drug, which means that it has originally been developed from a yew tree. The course of action of these type of treatment is based on stopping the cancerous cells from diving into two new cells, which consequently blocks the growth of the cancer. It is currently used for the treatment of advanced prostate cancer, but its use is currently being investigated in other types of cancer as well.

The compound was approved by the U. S. Food and Drug Administration (FDA) on June 17, 2010 and it is between PSA elevations due to cancer and those caused by benign prostate enlargement.

Other biomarkers

Biomarkers are substances like PSA that can be measured in a body fluid and used to detect or monitor a disease. Prostate cancer researchers are testing several potential biomarkers to supplement the use of PSA in prostate cancer screening. One of these biomarkers, pro-PSA (a precursor of PSA), has been shown to be useful in distinguishing between blood samples that have prostate cancer and those that do not. A urinary marker called PCA3 has also been useful in this regard. Some of these tests have received or are pending FDA approval.

Source: healthafter50.com

commercialized in the country under the brand name Jevtana by Sanofi. Cabazitaxel is prescribed in combination with prednisone for the treatment of patients who suffer from metastatic castrate resistant prostate cancer (mCRPC) and who were previously treated with a docetaxel-containing regimen. Patients are administered cabazitaxel intravenously into their bloodstream as a drip during about an hour. In order to do so, a thin and short tube known as cannula is placed into a vein in the arm, but the medication can also be administered through a central line, a portacath, or a PICC line. The treatment is recommended every three weeks and usually includes daily steroids as tablets.

Source: Prostate Cancer News Today.

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Special Thanks to Amgen and representative Betty-Jo Young

The Manitoba Prostate Cancer Support Group would like to acknowledge a recent donation from Amgen. Amgen produces medications that are used in the treatment of prostate cancer bone metastases. This donation makes it possible for us to promote prostate cancer awareness through our free meetings and newsletters. Their continued support and generosity is sincerely appreciated.



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2016 MEETINGS

Our July and August meetings will be held at our new location: Cindy Klassen Rec. Complex at 999 Sargent Avenue

July 21 Member's Forum Topic: Snacks/Juice and shared members stories

August 18 Dr. Eric Saltel, Urologist Topic: Sub-urethral sling option for urinary incontinence

The September meeting will be held at the Caboto Centre at 1055 Wilkes Avenue Sept. 15 Awareness Evening Topic: General overview of prostate cancer & treatments with time for Q.& A.

All meetings are 7 – 9 pm. Everyone Welcome

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