

Prostate Cancer

Definition

Prostate cancer is cancer that starts in the prostate gland. The prostate is a small, walnut-sized structure that makes up part of a man's reproductive system. It wraps around the urethra, the tube that carries urine out of the body.

Alternative Names

Cancer - prostate

Causes

The cause of prostate cancer is unknown. Some studies have shown a relationship between high dietary fat intake and increased testosterone levels.

There is no known association with an enlarged prostate or benign prostatic hyperplasia (BPH).

Prostate cancer is the third most common cause of death from cancer in men of all ages and is the most common cause of death from cancer in men over age 75. Prostate cancer is rarely found in men younger than 40.

People who are at higher risk include:

- African-American men
- Men who are older than 60
- Farmers
- Tire plant workers
- Painters
- Men who have been exposed to cadmium

The lowest number of cases occurs in Japanese men and those who do not eat meat (vegetarians).

Symptoms

Thanks to PSA testing, most prostate cancers are now found before they cause symptoms. Although most of the symptoms listed below can occur with prostate cancer, they are more likely to be associated with noncancerous conditions.

- Urinary hesitancy (delayed or slowed start of urinary stream)
- Urinary dribbling, especially immediately after urinating
- Urinary retention
- Pain with urination
- Pain with ejaculation

- Lower back pain
- Pain with bowel movement

Other symptoms that may occur with this disease:

- Excessive urination at night
- Urinary leakage (incontinence)
- Bone pain or tenderness
- Blood in the urine (hematuria)
- Abdominal pain
- Low red blood cell count (anemia)
- Unintentional weight loss
- Lethargy

Exams and Tests

A rectal exam will often show an enlarged prostate with a hard, irregular surface.

A number of tests may be done to diagnose prostate cancer:

- PSA test (may be high, although noncancerous enlargement of the prostate can also increase PSA levels)
- Free PSA (may help tell the difference between BPH and prostate cancer)
- AMACR (a newer test that is more sensitive than the PSA test for determining prostate cancer)
- Urinalysis (may show blood in the urine)
- Urine or prostatic fluid testing (may reveal unusual cells)

Prostate biopsy is the only test that can confirm the diagnosis.

The following tests may be done to determine whether the cancer has spread:

- CT scan
- Bone scan
- Chest x-ray

Health care providers use a system called staging to describe how far the cancer has grown. Tumor size, and how far the cancer has spread outside of the prostate determine the stage. Identifying the correct stage may help the doctor recommend the best treatment.

There are several different ways to stage tumors, including:

- The TNM staging system (most common)
- The A-B-C-D staging system, also known as the Whitmore-Jewett system

The grade of a tumor describes how aggressive a cancer might be. The more tumor cells differ from normal tissue, the faster these cells are likely to grow. The grading system for prostate cancer is called the Gleason grade or score. Higher scores are usually faster growing cancers.

Treatment

The appropriate treatment for prostate cancer is not clear. Treatment options vary based on the stage of the tumor. In the early stages, talk to your doctor about several options including surgery, radiation therapy, or, in older patients, monitoring the cancer without active treatment.

Prostate cancer that has spread may be treated with drugs to reduce testosterone levels, surgery to remove the testes, or chemotherapy.

Surgery, radiation therapy, and hormonal therapy can interfere with sexual desire or performance on either a temporary or permanent basis. Discuss your concerns with your health care provider.

SURGERY

Surgery is usually only recommended after a thorough evaluation and discussion of all treatment options. A man considering surgery should be aware of the benefits and risks of the procedure.

- Surgery to remove the prostate gland is often recommended for treating stages A and B prostate cancers. This is a lengthy procedure and complications are possible. There are many different surgery options. See: Radical prostatectomy and Robotic surgery.
- Orchiectomy alters hormone production and may be recommended for cancer that has spread to other areas of the body. There may be some bruising and swelling right after surgery, but this will gradually go away. The loss of testosterone production may lead to problems with sexual function, osteoporosis (thinning of the bones), and loss of muscle mass.

RADIATION THERAPY

Radiation therapy is used primarily to treat stage A, B, or C prostate cancers. Whether radiation is as good as prostate removal is unclear. The decision about which treatment to choose can be difficult. In patients whose health makes surgery too risky, radiation therapy is often the preferred alternative. Radiation therapy to the prostate gland is either external or internal:

- External beam radiation therapy is done in a radiation oncology center by specially trained radiation oncologists, usually on an outpatient basis. Before treatment, a therapist will mark the part of the body that is to be treated with a special pen. The radiation is delivered to the prostate gland using a device that looks like a normal x-ray machine. The treatment itself is generally painless. Side effects may include impotence, incontinence, appetite loss, fatigue, skin reactions such as redness and irritation, rectal burning or injury, diarrhea, inflamed bladder (cystitis), and blood in urine. External beam radiation therapy is usually done 5 days a week for 6 - 8 weeks.

- Prostate brachytherapy or internal radiation involves placing radioactive seeds inside you, directly into the prostate. A surgeon inserts small needles through the skin behind your scrotum to inject the seeds. The seeds are so small that you don't feel them. They can be temporary or permanent. Because internal radiation therapy is directed to the prostate, it reduces damage to the tissues around the prostate. Prostate brachytherapy may be given for early, slow-growing prostate cancers. It also may be given with external beam radiation therapy for some patients with more advanced cancer. Side effects may include pain, swelling or bruising in your penis or scrotum, red-brown urine or semen, impotence, incontinence, and diarrhea.
- Radiation is sometimes used for pain relief when cancer has spread to the bone.

MEDICATIONS

Medicines can be used to adjust the levels of testosterone. This is called hormonal manipulation. Because prostate tumors require testosterone to grow, reducing the testosterone level often works very well at preventing further growth and spread of the cancer. Hormone manipulation is mainly used to relieve symptoms in men whose cancer has spread. It may also be done by surgically removing the testes.

The drugs Lupron and Zoladex are also being used to treat advanced prostate cancer. These medicines block the production of testosterone. The procedure is often called chemical castration, because it has the same result as surgical removal of the testes. However, unlike surgery, it is reversible. The drugs must be given by injection, usually every 3 - 6 months. Possible side effects include nausea and vomiting, hot flashes, anemia, lethargy, osteoporosis, reduced sexual desire, and impotence.

Other medications used for hormonal therapy include androgen-blocking drugs (such as flutamide), which prevent testosterone from attaching to prostate cells. Possible side effects include erectile dysfunction, loss of sexual desire, liver problems, diarrhea, and enlarged breasts.

Chemotherapy is often used to treat prostate cancers that are resistant to hormonal treatments. An oncology specialist will usually recommend a single drug or a combination of drugs. Chemotherapy medications that may be used to treat prostate cancer include:

- Adriamycin
- Docetaxel
- Estramustine
- Mitoxantrone
- Paclitaxel
- Prednisone

After the first round of chemotherapy, most men receive further doses on an outpatient basis at a clinic or physician's office. Side effects depend on the drug, how often you take it, and for how long. Some of the side effects for the most commonly used prostate cancer chemotherapy drugs include:

- Blood clots
- Bruising
- Dry skin
- Fatigue
- Fluid retention
- Hair loss
- Lowering of your white cells, red cells, or platelets
- Mouth sores
- Nausea
- Tingling or numbness in hands and feet
- Upset stomach
- Weight gain

MONITORING

You will be closely watched to make sure the cancer does not spread. This involves routine doctor check-ups. Monitoring may include:

- Serial PSA blood test (usually every 3 months to 1 year)
- Bone scan or CT scan to check whether the cancer has spread
- Complete blood count (CBC) to monitor for signs and symptoms of anemia
- Monitoring for other signs and symptoms, such as fatigue, weight loss, increased pain, decreased bowel and bladder function, and weakness

Support Groups

You can ease the stress of illness by joining a support group whose members share common experiences and problems. See: Support group - prostate cancer

Outlook (Prognosis)

The outcome varies greatly. This is mainly because the disease is found in older men, who may have a variety of other diseases or conditions such as heart or respiratory disease, or disabilities. The outcome is also affected by the stage and grade of the disease when you are diagnosed.

Possible Complications

Impotence is a potential complication after prostate removal or radiation therapy. Recent improvements in surgical procedures have made this complication less common. Urinary incontinence is another possible complication. Medications can have side effects, including hot flashes and loss of sexual desire.

When to Contact a Medical Professional

Call for an appointment with your health care provider if you are a man over age 40 who has:

- Never been screened for prostate cancer (by rectal exam and PSA level)
- Not had regular, annual exams
- A family history of prostate cancer

Discuss the advantages and disadvantages to PSA screening with your health care provider.

Prevention

There is no known way to prevent prostate cancer. Following a vegetarian, low-fat diet or one that is similar to the traditional Japanese diet may lower your risk. Early identification (as opposed to prevention) is now possible by screening men over age 40 each year with a digital rectal examination (DRE) and PSA blood test.

There is a debate, however, as to whether PSA testing should be done in all men. There are several potential downsides to PSA testing. The first is that a high PSA level does not always mean that a patient has prostate cancer. The second is that health care providers are detecting and treating some very early-stage prostate cancers that may never have caused the patient any harm. The decision about whether to use a PSA testing to screen for prostate cancer should be based on a discussion between the patient and his health care provider.